



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

313003



ACTION MEMORANDUM

DATE: JUL 22 1999

SUBJECT: Restart, Change in Scope, Ceiling Increase and 12-Month Exemption at the
Smithtown Groundwater Site, Smithtown, Suffolk County, New York

FROM: Eric J. Wilson, On-Scene Coordinator
Removal Action Branch *[Signature]*

TO: Richard L. Caspe, Director
Emergency and Remedial Response Division *[Signature]*

THRU: Richard C. Salkie, Chief
Removal Action Branch

Site ID No.: KQ

I. PURPOSE

The purpose of this Action Memorandum is to request a change in scope, a ceiling increase and an exemption from the 12-month statutory limit to continue removal activities described herein for the Smithtown Groundwater Contamination Site (Site), Smithtown, Suffolk County, New York.

The objective of the removal action proposed in this memorandum is to provide an alternate water supply to homes with wells contaminated with PCE or it's breakdown products above MCLs. The total monies spent, to date, for removal response activities at the Site is \$349,000. It is expected that an additional \$243,000, is needed in order to complete the removal action which will bring the total estimated project ceiling to \$592,000.

Conditions at the Site continue to meet the criteria for a removal action under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as documented in

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CONCURRENCES

Name: Smithtown
Groundwater

Init: sb

Date: 06/16/99

Filename: AM#0165

Symbol	ERRD-RAB	ERRD-RAB	ERRD-RAB	ERRD-NJRB	ORC-NYCSUP	ERRD-DD	ERRD-D	
Surname	Wilson	Rotolo	Salkie	LaPadula	Simon	McCabe	Caspe	
Date	6/29/99	6/29/99	6/29/99	7/1/99	7/1/99		7/22	

TH
7/20

Section 300.415(b)(2) of the National Contingency Plan (NCP).

II. SITE CONDITIONS AND BACKGROUND

This Action Memorandum documents the proposed time-critical removal action for the Site. The Comprehensive Environmental Response, Compensation and Liability Information System ID number for the Site is NY0002318889.

A. Site Description

1. Removal site evaluation (RSE)

The U.S. Environmental Protection Agency (EPA) received a written request on October 9, 1997 from the New York State Department of Environmental Conservation (NYSDEC) to provide assistance in funding alternative water supplies for residences affected by contaminated groundwater. Included in NYSDEC's request was a private well sampling survey, prepared by the Suffolk County Department of Health Services (SCDHS) which presented drinking water survey results from 34 private wells in the area. The survey did not show concentrations of hazardous substances in excess of EPA's drinking water Removal Action Levels (RALs).

Additional sampling by SCDHS, of which the results were submitted to EPA in January 1998, showed levels of PCE in excess of the RAL. SCDHS collected samples from approximately 150 private wells in the Villages of Nissequogue and Head of the Harbor and the Hamlet of St. James, the areas that make up the Site. SCDHS discovered 23 residences contaminated with PCE above the MCL of five parts per billion (ppb). Four of these residences had concentrations of PCE exceeding EPA's RAL. As a follow up to the sampling completed by SCDHS, EPA sampled 295 homes in the area to determine the extent of PCE contamination. Based on all the sampling data generated, a total of 35 residential wells have been determined to be contaminated with PCE (or its breakdown products) at concentrations above the MCLs. The RAL for PCE has been exceeded in six private wells. SCDHS advised all affected residents not to use the water for drinking or cooking purposes and to limit exposure through direct contact. Some residents have installed water treatment systems for their household supplies.

The NYSDEC request for assistance and SCDHS data are included in the Action Memorandum for the Site dated July 23, 1998 (included as Attachment 1.)

2. Physical location

The Site is located in the Town of Smithtown in an area encompassed by the Villages of Nissequogue and Head of the Harbor and the Hamlet of St. James. The homes in this area use private wells for potable water supply and septic systems for sanitary waste water disposal. Public water service is being extended into several of the areas affected by the groundwater contamination. The Site is situated south of Stoney Brook Harbor and east of the Nissequogue River.

3. Site characteristics

Wells contaminated above the RAL or MCL are located in the Village of Nissequogue, Village of Head of the Harbor, and the Hamlet of St. James. The area is primarily residential with some light commercial industry to the east in the Village of St. James and to the south in Smithtown. The majority of residences within the project area rely on groundwater as their sole source of potable water. The soil in the area is primarily sandy with discontinuous clay lenses.

According to information provided by SCDHS and preliminary information gathered by EPA, the source of the groundwater contamination has not yet been determined. SCDHS is currently investigating eleven current or former commercial/industrial facilities in the area. All of these facilities are located east of the Site. Groundwater flow in the area is from the southeast to the northwest toward the Nissequogue River and Stoney Brook Harbor.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling conducted between 1996 and 1998 by SCDHS and in April 1998 by EPA has identified 35 private wells that are contaminated with volatile organic compounds (VOCs) primarily PCE, in concentrations above the Federal and MCLs. Six of these homes are contaminated above the RAL for PCE.

The materials below in Table I are CERCLA designated Hazardous Substances, as listed in 40 CFR Table 302.4. This data is only a summary of the more pertinent analytical information available for the Site.

Table I - Smithtown Groundwater Contamination Site, Smithtown, NY

CONTAMINANT	MAXIMUM * CONCENTRATION FOUND (ppb)	STATUTORY SOURCE FOR ** DESIGNATED AS A HAZARDOUS SUBSTANCE UNDER CERCLA	EPA RAL (ppb)	EPA MCL (ppb)
1,1,1 Trichloroethane	10	1,2,4	1000	200
Perchloroethylene	200	1,2,4	70	5
Trichloroethylene	6.2	1,2,4	300	5

Legend

1. Clean Water Act, Section 311(b)(4)
2. Clean Water Act, Section 307(a)
4. RCRA Section 3001

- * Based on sampling results from SCDHS (1996-1998) and EPA, April 1998
- ** Statutory source for designation as a hazardous substance.

5. National priorities list (NPL) status

The Site was added to the NPL on January 19, 1999. The remedial investigation is scheduled to begin in 1999.

6. Maps, pictures and other graphic representations

Site maps are included in the Action Memorandum for the Site dated July 23, 1998 (see Attachment 1).

B. Other Actions To Date

1. Previous actions

Verbal authorization was granted to undertake a removal action to deliver bottled water to those residences identified as having wells contaminated with PCE and its breakdown products. This activity was initiated April 8, 1998 for homes exceeding the RAL and on June 25, 1998 for homes exceeding the MCLs.

In July 1998, the use of household granular activated carbon treatment systems was selected to mitigate threats to public health associated with exposure to PCE or its breakdown products in drinking water. In August 1998, the scope of the removal action was modified to include connecting the affected homes to public water service, where available.

At homes where MCLs were exceeded and water mains were available, connections were provided to public water supplies. At homes where MCLs were exceeded and water service was not available, individual household carbon treatment systems were installed or existing treatment systems (installed by the homeowner) were upgraded to EPA specifications.

Of the 35 homes with private wells contaminated with PCE or its breakdown products above MCLs, 26 were provided with connections to public water supplies, seven were provided with household carbon treatment systems and two had existing treatment systems upgraded. This phase of the removal action was completed on April 7, 1999 at a cost of \$349,000.

2. Current actions

Field activities for the Phase I Remedial Investigation/Feasibility Study began on July 7, 1999 and will include additional private well sampling. This sampling may result in the identification of additional wells contaminated with PCE above MCLs.

Nine homeowners are currently maintaining water treatment systems which were installed or upgraded by EPA. These homeowners may not have the resources or expertise to continue to monitor and maintain these systems effectively.

C. State and Local Authorities' Roles

1. State and local actions to date

SCDHS is taking a supportive role at the Site. SCDHS has and continues to sample potable wells in the vicinity of the Site at the request of the residents. This activity will assist in identifying additional contaminated wells and in determining the movement of the contaminants in the subsurface.

SCDHS has also installed five monitoring wells at the Site in an attempt to locate the potential source or sources of the contamination. SCDHS is also actively investigating potential sources by implementing a septic system sampling program at businesses in the area that may be responsible for the groundwater contamination.

2. Potential for continued State/local response

SCDHS will continue its water sampling program in the affected and surrounding areas upon the request of individual residents. It will also continue its investigation of potential sources of groundwater contamination.

NYSDEC is not able to undertake timely response actions to eliminate the threats posed by the Site since a source has not been identified. Additionally, the local government does not have the resources necessary to provide a safe drinking water supply in a timely manner.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site continue to meet the criteria for a removal action under Section 40 CFR 300.415(b)(2) of the NCP. Qualifying criteria for the threats to the public health and welfare include the following:

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

Sampling conducted by the SCDHS and EPA has resulted in identification of 35 private, residential wells contaminated with PCE (or its breakdown products) in excess of the federal and State MCLs. To address the public health risks associated with exposure to site related VOCs in household water supplies, EPA provided 26 of these homes with connections to public water supplies and installed or upgraded activated carbon treatment systems in nine of these homes. Activated carbon treatment systems are effective in removing VOCs from water if properly monitored and maintained. However, if treatment systems are not properly monitored and maintained, residents could be exposed to unacceptable levels of VOCs in household water. Also, additional wells at the Site may be identified with VOCs in excess of MCLs. Exposure to PCE and VOCs can occur from ingestion of contaminated water, ingestion of food

prepared with contaminated water, or inhalation of vapors. Vapors of hazardous VOCs can accumulate in air within the home as a result of the household use of contaminated water. Humidifiers, dishwashers, clothes washers, showers and household cleaning can increase the concentration of vapors in air inside the home.

The associated potential health effects from exposure to PCE at elevated concentrations is provided below.

<u>SUBSTANCE</u>	<u>HEALTH EFFECT</u>
Tetrachloroethene	A,B,C,D, E, G
A - Eye, skin, respiratory irritant	
B - Liver damage	
C - Kidney damage	
D - Toxic by inhalation, ingestion, or dermal contact	
E - Carcinogenic	
F - Mutagenic	
G - Central nervous system effects	

Available data also indicates that when high concentrations of PCE are inhaled, single exposures can effect the central nervous system leading to dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking as well as walking, and possibly unconsciousness and death. Such short term effects could result from exposure to 100 ppm of PCE, orders of magnitude greater than the levels expected from the contaminant present at the Site. The health effect of greatest concern for the Site is the potential long term carcinogenic effects of PCE.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release;

EPA is the only government agency capable of taking timely and appropriate action to respond to the threat posed by the presence of hazardous substances at the Site. As discussed in Section II. C., State and local authorities are not able to undertake timely response actions to eliminate the threats posed by the Site.

A removal action is the only mechanism by which EPA can provide alternate water supplies to affected homes until a remedy addressing drinking water contamination is selected.

B. Threat to the Environment

Groundwater, a natural resource, has been determined to be contaminated with VOCs. At this time the extent of the threat to the environment cannot be clearly defined since the size of the plume is unknown. The Site is bordered by the Stony Brook Harbor and the Nissequogue River. Sampling data thus far appears to indicate that the contamination is moving in a northwest direction toward bodies of water. Furthermore, residential wells directly adjacent to the harbor are contaminated above the RAL.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

Conditions at the Site and the proposed actions meet the criteria for a consistency exemption as specified in CERCLA Section 104(c). Continued response actions are otherwise appropriate and consistent with remedial actions to be taken. Providing alternate water supply to residents exposed to site-related VOCs, above MCLs, will not interfere with likely remedial alternatives to address ground-water contamination and is necessary to protect public health.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

Whole house granular activated carbon water treatment systems have been installed or upgraded at nine homes where site-related VOCs have been identified at concentrations in excess of MCLs. The treatment systems consist of a particulate filter for sediment control; two activated carbon filters (installed in series) to remove VOCs; and an ultraviolet light disinfection unit for bacteriological control. Routine monitoring and maintenance is necessary to insure proper system operation and VOC removal. VOC removal efficiency will be monitored through annual sampling of treatment system influent and effluent water. Activated carbon will be replaced, as needed, based on the results of annual sampling. Initial sizing calculations indicate that each carbon filter has sufficient capacity to treat water for 1,000 days before requiring replacement. Biannual routine maintenance will include system inspection, replacement of the particulate filter cartridge and inspection and cleaning (if required) of the UV disinfection unit. Annual maintenance will include replacement of the bulb in the UV disinfection unit. A contingency is included for non-routine maintenance and emergency service of treatment systems. Installed and upgraded treatment systems will be monitored and maintained until a remedy is selected to address drinking water contamination at the Site. For budgeting purposes, maintenance and monitoring is planned for three years.

Additional homes that are identified with site-related VOCs above MCLs will be provided with an alternate water supply. Where water service is available, connections to water mains will be provided. This includes installing the copper service line from water company distribution system to the house, providing a connection within the house to existing plumbing, and disconnecting the private water supply well. This does not include the payment of costs for work performed by or for the water provider in extending water service to the affected property. Where water service is not available, individual household carbon treatment systems will be installed or existing treatment systems (those installed by the homeowner) will be upgraded. Treatment systems which are installed or upgraded, as part of the removal action, will be maintained until a remedy is selected.

2. Contribution to remedial performance

The actions proposed in this memorandum will address the threats posed to public health by providing a safe drinking water supply to affected residences. The proposed action would not adversely affect any plans for long-term remediation of the aquifer.

3. Description of alternative technologies

Two alternatives were considered to address the health threats associated with exposure to VOCs in private wells at the Site: installation of household carbon treatment systems at the wellhead and connection to available water service.

(i) Household Carbon Treatment Systems

Carbon treatment is an effective means of removing the contaminants of concern from water. Individual household treatment systems would include: a particulate filter for sediment control; two activated carbon filters to remove VOCs; and an ultra-violet light disinfection unit for bacteriological control. These systems are reliable and are easily maintained but require monitoring and maintenance to function properly. These treatment systems would provide protection in households where they are installed, monitored and maintained.

(ii) Connection to Water Service

Connection of affected homes to available water service would provide residents with permanent protection from exposure to VOCs.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Due to the time-critical nature of this removal action, an EE/CA will not be prepared.

5. Applicable or relevant and appropriate requirements (ARARs)

Federal ARARs determined to be practicable for the Site are the Clean Water Act and the Safe Drinking Water Act.

6. Project schedule

A program of monitoring and maintenance of installed and upgraded treatment systems will be initiated upon approval of this action memo and will continue until a remedy addressing contaminated drinking water is selected. Homes with site-related VOC contamination above MCLs will be provided with an alternate water supply when identified.

B. Estimated Costs

This project involves the monitoring and maintenance of installed or upgraded water treatment systems and the provision of alternate water supply for homes identified with VOCs above MCLs. The estimated costs for this project are summarized below.

	<u>Current Ceiling</u>	<u>Cost to Date</u>	<u>Proposed Costs</u>	<u>Proposed Ceiling</u>
<u>Extramural Costs:</u>				
<u>Regional Allowance Costs:</u>				
ERRS Cleanup contractor: (including contingency)	\$297,000	\$254,000	\$123,000	\$377,000
<u>Other Extramural Costs:</u>				
START	<u>39,000</u>	<u>24,000</u>	<u>38,000</u>	<u>62,000</u>
Subtotal Extramural Costs	336,000	278,000	161,000	439,000
Extramural Cost Contingency	<u>36,000</u>	<u>N/A</u>	<u>32,000</u>	<u>32,000</u>
Total Extramural Costs	372,000	278,000	193,000	471,000
<u>Intramural Costs:</u>				
Intramural Direct Cost	26,000	24,000	17,000	41,000
Intramural Indirect Costs	<u>52,000</u>	<u>47,000</u>	<u>33,000</u>	<u>80,000</u>
Total Intramural Costs	78,000	71,000	50,000	121,000
TOTAL PROJECT CEILING	\$450,000	\$349,000	\$243,000	\$592,000

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the funds for the removal action described herein are not authorized, the groundwater contamination at the Site will continue to pose a threat to human health and welfare.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

No federal enforcement action is in progress at this time. An investigation into the source of the contamination is underway. Should a responsible party or parties be identified and be willing to undertake timely and appropriate corrective action, all or part of the funds requested herein may not be spent.

X. RECOMMENDATIONS

This decision document represents the selected removal action for the Smithtown Groundwater Contamination Site, which is located in Smithtown, Suffolk County, New York. This document was developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site continue to meet the NCP Section 300.415(b)(2) criteria for a removal action and the CERCLA Section 104(c) consistency exemption. I recommend you approve the restart, change in scope, exemption from the 12-month limitation, and proposed ceiling increase of \$142,000. The total project ceiling if approved will be \$592,000 of which \$377,000 comes from the regional removal allowance. There are sufficient monies in our current Advice of Allowance to fund this project.

Please indicate your approval and authorization of funding for the Smithtown Groundwater Site, as per current Delegation of Authority, by signing below.

Approved: _____

Richard L. Caspe, Director
Emergency and Remedial Response Division

Date: _____

7/22/99

Disapproved: _____

Richard L. Caspe, Director
Emergency and Remedial Response Division

Date: _____

cc: (after approval is obtained)

R. Caspe, ERRD-D
R. Salkie, ERRD-RAB
J. Rotola, ERRD-RAB
G. Zachos, OMBUDSMAN
R. Dease, ERRD-RPB
B. Bellow, CD
M. Cervantes, CD
C. Echols, CD
K. Weaver, OPM-FAM
P. Simon, ORC-NYCSUP
J. Yu, ORC-NYSUP
R. Gherardi, OPM-FIN
T. Johnson, 5202G
P. McKechnie, OIG
M. O'Toole, NYSDEC
B. Stewart, NYSDEC
G. Wheaton, NOAA
A. Raddant, DOI
O. Douglas, START

ATTACHMENT 1
Action Memorandum dated July 23, 1998



ACTION MEMORANDUM

DATE: 11/2/98

SUBJECT: Documentation of Verbal Authorizations and Request for a Removal Action and Ceiling Increase at the Smithtown Groundwater Site, Smithtown, Suffolk County, New York

FROM: David Rosoff, On-Scene Coordinator *DR*
Eric J. Wilson, On-Scene Coordinator *EJW*
Removal Action Branch

TO: Richard L. Caspe, Director
Emergency and Remedial Response Division

THRU: *Richard C. Salkie*
Richard C. Salkie, Chief
Removal Action Branch

Site ID No. KQ

I. PURPOSE

The purpose of this Action Memorandum is to document two verbal authorizations as well as to request authorization for a removal action and ceiling increase to conduct the proposed removal activities described herein for the Smithtown Groundwater Contamination Site (Site), Smithtown, Suffolk County, New York. The Emergency and Remedial Response Division (ERRD) Director's April 8, 1998 verbal authorization provided a total project ceiling of \$15,000 to initiate a removal action providing bottled water delivery to homes on the Site with wells

contaminated with tetrachloroethene (PCE) at levels in excess of the Removal Action Level (RAL). On June 25, 1998 the ERRD Division Director verbally authorized an additional \$10,000 in mitigation funds to initiate the delivery of bottled water to homes on the Site contaminated above the Maximum Contaminant Level (MCL) for PCE. The total project ceiling authorized to date is \$25,000.

Conditions at the Site continue to meet the criteria for a removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as documented in Section 300.415(b)(2) of the National Contingency Plan (NCP).

The action proposed in this memorandum is to install granular activated carbon (GAC) treatment units in homes with wells contaminated with PCE above the Federal and New York State MCL of five parts per billion (ppb), and to continue to provide these homes with bottled water until the treatment systems are installed. The proposed removal actions are expected to cost an additional \$225,000 which will bring the total estimated project ceiling to \$250,000.

There are no nationally significant or precedent-setting issues associated with this removal action.

II. SITE CONDITIONS AND BACKGROUND

This Action Memorandum documents the proposed time-critical action for the Site. The Comprehensive Environmental Response, Compensation and Liability Information System ID number for the Site is NY0002318889.

A. Site Description

1. Removal site evaluation (RSE)

The U.S. Environmental Protection Agency (EPA) received a written request on October 9, 1997 from the New York State Department of Environmental Conservation (NYSDEC) to provide assistance in funding alternative water supplies for residences affected by contaminated groundwater. Included with NYSDEC's request for assistance was a private well sampling survey, prepared by the Suffolk County Department of Health Services (SCDHS), which presented drinking water survey results from 34 private wells in the area. The survey did not show that the RALs were exceeded for any hazardous substances (Appendix A).

Additional sampling of residences by SCDHS, submitted to EPA in January 1998, showed levels of PCE, a hazardous substance, exceeding RALs of 70 ppb. To date, SCDHS has collected samples from approximately 150 private wells in the Villages of Nissequogue, Head of the Harbor and the Hamlet of St. James, the areas that make up the Site. SCDHS discovered that 23 residences were contaminated with PCE above the MCL of five ppb. Four of these residences had concentrations of PCE exceeding EPA's RAL. As a follow up to the sampling conducted by SCDHS, EPA sampled 295 homes in the area to determine the extent of PCE contamination. Based on all the sampling data generated by both SCDHS and EPA, a total of 33 residential wells

have been identified as being contaminated with PCE (or its breakdown products) at concentrations above the MCLs (see Appendix B). The RAL for PCE has been exceeded in six private wells. SCDHS has advised all affected residents not to use the water for drinking or cooking purposes and to limit exposure through direct contact. In April 1998, EPA began the delivery of bottled water to four of the residences contaminated above the RAL for PCE (the other two residences had already installed GAC treatment systems). In June 1998, EPA expanded the delivery of bottled water to homes where the MCL for PCE or its breakdown products was exceeded and whose residents were interested in receiving the bottled water.

2. Physical location

The Site is located in the Town of Smithtown in an area encompassed by the Villages of Nissequogue and Head of the Harbor and by the Hamlet of St. James (See Figure 1). The homes in this area use private wells for potable water supply and septic systems for sanitary waste water disposal. At this time, the affected area is not serviced by a public water supply, although water mains are available to the south and east immediately adjacent to the contaminated areas. The Site is situated south of Stoney Brook Harbor and east of the Nissequogue River.

3. Site characteristics

Wells contaminated above the RAL and MCL for PCE are located in the Village of Nissequogue, the Village of Head of the Harbor and the Hamlet of St. James. The area is primarily residential with some light commercial industry to the east in the Village of St. James and to the south in Town of Smithtown. The majority of residences within the project area rely on ground water as their sole source of potable water. The soil in the area is primarily sandy with discontinuous clay lenses.

According to information provided by SCDHS and preliminary information gathered by EPA, the source of the groundwater contamination has not yet been determined. However, SCDHS is currently investigating eleven current or former commercial/industrial facilities in the area. All these facilities are located to the east of the Site. Groundwater in this area flows from the southeast to the northwest toward the Nissequogue River and Stoney Brook Harbor.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling conducted between 1996 and 1998 by SCDHS and in April 1998 by EPA has identified 33 private wells at the Site which are contaminated with volatile organic compounds (VOCs), primarily PCE, in concentrations above the Federal and New York State MCLs. Six of these homes are contaminated above the RAL for PCE.

The materials below in Table I are CERCLA-designated Hazardous Substances, as listed in 40 CFR Table 302.4. This data is only a summary of the more pertinent analytical information available for the Site.

Table I - Smithtown Groundwater Contamination Site, Smithtown, NY

CONTAMINANT	MAXIMUM * CONCENTRATION FOUND (ppb)	STATUTORY SOURCE FOR DESIGNATION AS A HAZARDOUS SUBSTANCE UNDER CERCLA	EPA RAL (ppb)	EPA MCL (ppb)
1,1,1 Trichloroethane	10	1,2,3	1000	200
Tetrachloroethene	200	1,2,3	70	5
Trichloroethene	6.2	1,2,3	300	5

Legend

1. Clean Water Act, Section 311(b)(4)
2. Clean Water Act, Section 307(a)
3. RCRA Section 3001

* Based on sampling results from SCDHS (1996-1998) and EPA (April 1998)

5. National priorities list (NPL) status

The Site is not listed on the NPL.

NYSDEC has not investigated the Site to determine the Hazardous Ranking System Score (HRS). EPA's preremedial program, in conjunction with the Removal Action Branch, has performed an Integrated Site Assessment (IA) to determine if the site should be listed on the NPL. Based on the results of the IA, EPA is planning to propose the Site for listing on the NPL. An HRS package is currently being prepared.

6. Maps, pictures and other graphic representations

See Figures 1 and 2.

B. Other Actions To Date

1. Previous actions

Verbal authorizations have been granted to undertake a removal action to deliver bottled water to those residences identified as having contaminated wells exceeding the MCL and the RAL for PCE and its breakdown products. This removal activity was initiated on April 8, 1998 for homes exceeding the RAL and June 25, 1998 for homes exceeding the MCLs. Such actions represents an interim measure to protect the health of the public until a more permanent solution to the problem can be implemented. Some residents have already installed water treatment systems in their homes.

2. Current action

Under this Action Memorandum, EPA will provide residences that are contaminated with site-related VOCs above MCLs with GAC treatment systems.

The treatment systems will effectively remove VOCs from the well water and provide affected residents with a safe potable water supply that can be used for all domestic purposes.

C. State and Local Authorities' Roles

1. State and local actions to date

The SCDHS is taking a supportive role at the Site. SCDHS has and continues to sample wells in the vicinity of the Site at the request of the residents. This activity will assist in identifying additional contaminated wells and in determining the movement of contaminants in groundwater.

SCDHS has also installed five monitoring wells on the Site in an attempt to locate the potential source or sources of contamination. SCDHS is also actively investigating potential sources of contamination by sampling the septic systems of businesses in the area that may be responsible for the groundwater contamination.

2. Potential for continued State/local response

SCDHS will continue to test wells upon request by individual residents at the Site. It will also continue its investigation of potential sources. Residential well data collected by SCDHS will be used to monitor the movement of the plume and to determine if and when additional homes will need to be supplied with GAC treatment systems.

NYSDEC is not currently able to undertake timely response actions to eliminate the threats posed by the Site. Furthermore, the local government does not have the resources necessary to provide a safe drinking water supply in a timely manner.

The responsibility of maintenance for these GAC treatment system units, after installation, is dependent upon several factors. If the Site is listed on the NPL, EPA will have the necessary authority to provide Operation and Maintenance (O&M) until a permanent solution is implemented. If the Site is not listed on the NPL, EPA will request that NYSDEC provide for the O&M of the treatment systems. If NYSDEC is unable to provide O&M, it will be necessary for each homeowner to operate and maintain their own system.

Residents in certain areas of the Site have contacted the Suffolk County Water Authority to inquire about the feasibility and cost of extending water mains to specific affected areas. Residents from some effected areas are actively trying to gain community support to purchase waterline extensions at their own cost.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site continue to meet the criteria for a removal action under Section 40 CFR 300.415(b)(2) of the NCP. Qualifying criteria for the threats to the public health and welfare include the following:

- (ii) **Actual or potential contamination of drinking water supplies or sensitive ecosystems;**

The results generated by SCDHS sampling between 1996 and 1998 and EPA's April 1998 sampling identified 33 wells contaminated by PCE (or its breakdown products) in excess of the Federal and State MCLs of 5 ppbs (see Appendix B). EPA's RAL of 70 ppb is exceeded in six of these wells.

Exposure to PCE and VOCs can occur from ingestion of contaminated water, ingestion of food prepared with contaminated water, or inhalation of vapors. Vapors of hazardous VOCs can accumulate in the air within the home as a result of the normal household use of contaminated water. Running household appliances such as humidifiers, dishwashers, and clothes washers or performing routine activities such as taking showers and cleaning the house can increase the concentration of vapors in air inside the home.

The associated health effects from exposure to PCE at elevated concentrations is provided below:

<u>SUBSTANCE</u>	<u>HEALTH EFFECT</u>
Tetrachloroethene	A,B,C,D,E,G
A - Eye, skin, respiratory irritant	
B - Liver damage	
C - Kidney damage	
D - Toxic by inhalation, ingestion, or dermal contact	
E - Carcinogenic	
F - Mutagenic	
G - Central nervous system effects	

Available data also indicates that single exposures of high concentrations of PCE, when inhaled, can effect the central nervous system resulting in dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking as well as walking, possibly unconsciousness and death. The acute effects as described previously would result from a PCE exposure to 100 parts per million, a

concentration orders of magnitude greater than the levels expected from the contaminant present at the Site. The health effect of greatest concern for the Smithtown Site is the long term carcinogenic effects of PCE.

- (vii) **The availability of other appropriate federal or state response mechanisms to respond to the release;**

EPA is the only government agency capable of taking necessary timely and appropriate actions needed to respond to the threat posed by the presence of hazardous substances at the Site. As discussed in Section II. C., state and local authorities are not able to undertake timely response actions to eliminate the threats at the Site.

B. Threat to the Environment

Groundwater, a natural resource, has been determined to be contaminated with VOCs. At this time the extent of the threat to the environment cannot be clearly defined since the size of the plume is unknown. The Site is bordered by the Stony Brook Harbor and the Nissequogue River. Residential wells directly adjacent to the harbor are known to be contaminated above the RAL. Sampling data thus far appears to indicate the contamination is moving in a northwest direction toward the these bodies of water.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The GAC treatment systems will be installed in homes with wells that are contaminated with Site related VOCs which exceed MCLs in order to address the threats that currently exist at the Site. These systems can effectively reduce Site-related VOC concentrations below MCLs and are easily maintained and operated. The GAC unit will be supplemented with both a pre-treatment particulate filter for sediment control and a post treatment UV light for disinfection.

Site-related VOCs have been identified at concentrations exceeding MCLs of 5 ppbs in the water supply to 33 homes. Several homeowners have had treatment systems installed in their homes at their own expense. EPA will install new GAC treatment systems or upgrade existing systems as necessary to ensure a potable water supply is provided to these homes. If additional residences

are identified in which Site-related VOCs are found to exceed MCLs, they will be provided with treatment systems, where possible, and where this can be accomplished within project budget and statutory time limitations. This action will include necessary sampling and O&M activities. The statutory time limitation as set forth in Section 104 of CERCLA, 42 U.S.C. § 9604 on this project means that the removal action (including O&M) is to end April 1999.

2. Contribution to remedial performance

This Site is not on the NPL, but it is currently being evaluated for potential inclusion. The actions proposed in this memorandum will address the threats posed by hazardous substances to public health by providing a safe drinking water supply to affected residences. The proposed action would not adversely affect any plans for long-term remediation of the aquifer. The selected removal action will assist in any long-term remediation of groundwater contamination by providing treatment at the wellhead.

3. Description of alternative technologies

Three alternatives have been considered to address the threat that currently exists at the Site: GAC with ultraviolet (UV) light treatment, air stripping with UV light treatment and the extension of the SCWA water main to the affected areas.

(i) GAC with UV treatment

GAC with UV units can provide populations at risk with acceptable temporary protection. GAC units are reliable and easily maintained and operated, but require some monitoring, operation and maintenance (MO&M) to function properly. UV treatment would be provided to protect the water supply from bacterial contamination.

(ii) Air strippers with UV treatment

Air strippers with UV units can provide populations at risk with acceptable temporary protection. Air Strippers may require a heated enclosure outside the home. The initial expenditure for air strippers is greater than that for GAC treatment systems, but maintenance requirements for the air stripper are minimal in comparison. These systems do, however, require regular monitoring. UV treatment would be provided to protect the water supply from bacterial contamination. Installation of residential air strippers presents certain logistical and aesthetic concerns for the affected residents. Of particular concern is the placement of the off-gas vent pipe which must be attached to the outside of the home and extended at least two feet above the roof-line.

(iii) Public water main extension

The nearest water mains to the Site, located along Nissequogue River Road and Moriches Road, are within two miles of the furthest residential wells that exceed the MCL for PCE. Due to the size of the properties on the Site (two acre lots), the extension of water mains to affected areas

would require a substantially greater capital expenditure than the household treatment system options.

EPA has selected the installation of GAC units with UV treatment as the most cost effective and efficiently installed response alternative available for the Site.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Due to the time-critical nature of this removal action, an EE/CA will not be prepared.

5. Applicable or relevant and appropriate requirements (ARARs)

Federal ARARs for the Site are standards pursuant to the Clean Water Act and the Safe Drinking Water Act, which will be met to the extent practicable.

6. Project schedule

The procurement and subsequent installation of the GAC units will begin following approval of this action memorandum. EPA will coordinate with the affected residents to schedule the treatment system installation. After the treatment systems are installed, monitoring of system performance and maintenance will be performed by EPA for the duration of the removal action or until responsibility is assumed by the state or individual home owner. The removal action will be completed within the one year CERCLA statutory limit.

B. Estimated Costs

This project involves the installation of water treatment systems at residences where site-related VOCs were found in the water supply at levels exceeding MCLs; 33 residences currently meet this criteria. This action will also include necessary sampling and O&M activities. Funds not utilized for these purposes may be used for the installation and O&M of treatment systems at additional qualifying residences identified during the course of the removal action. The estimated costs for the completion of this project are summarized below.

	<u>Current Ceiling</u>	<u>This Action</u>	<u>Proposed Ceiling</u>
<u>EXTRAMURAL COSTS:</u>			
<u>Regional Allowance Costs:</u>			
ERRS Cleanup contractor: (including contingency)	\$20,000	\$145,000	\$165,000
<u>Other Extramural Costs:</u>			
START	<u>0</u>	<u>20,000</u>	<u>20,000</u>

Subtotal Extramural Costs	\$20,000	\$165,000	\$185,000
Extramural Cost Contingency	<u>0</u>	<u>33,000</u>	<u>33,000</u>
TOTAL EXTRAMURAL COSTS	\$20,000	\$198,000	\$218,000
<u>INTRAMURAL COSTS:</u>			
Intramural Direct Costs	\$ 1,500	\$ 9,000	\$ 11,000
Intramural Indirect Costs	<u>3,500</u>	<u>18,000</u>	<u>21,000</u>
TOTAL INTRAMURAL COSTS	<u>\$ 5,000</u>	<u>\$ 27,000</u>	<u>\$ 32,000</u>
TOTAL PROJECT CEILING	\$25,000	\$225,000	\$250,000

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the funds for the removal action described herein are not authorized, the hazardous substances in the contaminated groundwater will continue to pose a threat to human health and welfare and the environment.

VIII. OUTSTANDING POLICY ISSUES

None.

IV. ENFORCEMENT

An investigation into identifying the source of contamination is underway. Should a responsible party or parties (PRPs) be identified and be willing to undertake timely and appropriate corrective action, all or part of the funds requested herein may not be spent. EPA will be pursuing CERCLA enforcement actions concurrently with the time-critical removal action requested herein.

X. RECOMMENDATIONS

This decision document represents the selected removal action for the Smithtown Groundwater Contamination Site, which is located within the Smithtown, Suffolk County, New York. This document was developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site continue to meet the NCP Section 300.415(b)(2) criteria for a removal action. The total project ceiling for this removal action if approved will be \$250,000 of which

\$165,000 comes from the Regional removal allowance. There are sufficient monies in our current Advice of Allowance to fund this project.

I recommend your approval of the verbal authorizations for funding as well as a request for a removal action and ceiling increase for the Smithtown Groundwater Site, as per current Delegation of Authority, by signing below.

Approved: _____

Richard L. Caspe, Director
Emergency and Remedial Response Division

Date: _____

7/23/98

Disapproved: _____

Richard L. Caspe, Director
Emergency and Remedial Response Division

Date: _____

cc: (if approval is obtained)

J. Fox, RA
W. Muszynski, DRA
R. Caspe, ERRD-D
R. Salkie, ERRD-RAB
J. Rotola, ERRD-RAB
J. Witkowski, ERRD-RAB
J. Yu, ORC-NYSUP
B. Bellow, CD
M. Cervantes, CD
C. Echols, CD
S. Murphy, OPM-FAM
P. Simon, ORC-NYCSUP
R. Gherardi, OPM-FIN
T. Johnson, 5202G
P. McKechnie, OIG
M. O'Toole, NYSDEC
B. Stewart, NYSDEC
G. Wheaton, NOAA
A. Raddant, DOI
O. Douglas, START

APPENDIX A
Request from NYSDEC

OCT 10 10 37 AM '97



John P. Cahill
Commissioner

007 -3

Mr. Richard Caspe
Director
Emergency & Remedial Response Division
USEPA, Region II
290 Broadway
New York, New York 10007-1866

Dear Mr. Caspe:

Re: Groundwater Contamination
Town of Smithtown, Suffolk County, NY

I have enclosed a package of information and correspondence regarding low level, but widespread, groundwater contamination in the Villages of Head of Harbor and Nissequogue and the Hamlet of Saint James, all in the Town of Smithtown, Suffolk County, New York.

The Suffolk County Department of Health Services (SCDHS) was informed by NYSDEC letter dated August 27, 1997 that the NYSDEC could take no action as the situation does not appear to be caused by a listed Class 2 Inactive Hazardous Waste Disposal Site and further that there are no exceedences of USEPA Removal Action Levels. Additionally, NYSDEC Commissioner Cahill, in a letter dated September 22, 1997, responded to Congressman Forbes' request of June 24, 1997 and reiterated the situation that neither State nor Federal eligibility criteria are met for funding.

However, the SCDHS has requested that the NYSDEC write to the USEPA in their behalf and request that this situation be reviewed to determine if any alternatives exist at the federal level to assist in finding and/or funding an alternate water supply to the effected areas.

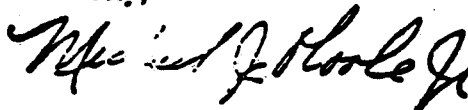
This letter is a formal request for such a review.

Mr. Richard Caspe

Page 2

If you have any questions, please call Richard Koelling, P.E., at (518) 457-9280 or Robert Becherer, P.E., of the NYSDEC Region 1, Long Island, Office at (516) 444-0240.

Sincerely,



Michael J. O'Toole, Jr.

Director

Division of Environmental Remediation

Enclosure

cc: w/Enc. B. Sprague, USEPA Region II, Edison, NJ
w/o Enc. G. A. Carlson, NYSDOH
R. Salkie, USEPA Region II, Edison, NJ
G. Zachos, USEPA Region II, Edison, NJ



Robert J. Gaffney
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

CLARE B. BRADLEY, M.D., M.P.H.
ACTING COMMISSIONER

July 28, 1997

Mr. Robert Becherer
New York State Department of Environmental Conservation
Hazardous Waste Remediation Program
SUNY, Building 40
Stony Brook, N.Y. 11794

Dear Mr. Becherer:

I am writing to request remediation of a hazardous waste disposal site located in the Incorporated Village of Head of the Harbor, the Incorporated Village of Nissequogue, and an unincorporated section of St. James in the Town of Smithtown. Assistance under the state superfund program or a USEPA CERCLA Removal Action is requested to provide a safe drinking water supply to a total of homeowners whose private wells have been contaminated with a number of chemicals, including tetrachloroethene, dichloropropane, trichloroethane, TCPA (dacthal metabolite), and nitrate.

Between June 1996 and July 1997, the department tested a total of 78 private residential wells to delineate the areas of contamination. The source or sources of these contaminants has not been defined at this time. The geographic distribution of specific chemicals and/or combinations of chemicals at this point suggests no connection to normal residential activities. Wells containing contaminant concentrations exceeding prevailing state or federal Maximum Contaminant Levels are as follows:

Tetrachloroethene ranging between the MCL of 5 ppb and 34 ppb at 11 locations
Dichloropropane ranging between the MCL of 5 ppb and 14 ppb at 2 locations
Trichloroethane as high as the MCL of 5 ppb and at 1 location
cis- 1,2 dichloroethane as high as the MCL of 5 ppb, at 6 ppb at 1 location
TCPA ranging between the MCL of 50 ppb and 99 ppb at 3 locations
Nitrate ranging between the MCL of 10 mg/L and 25.5 mg/L at 3 locations

OFFICE OF THE COMMISSIONER
225 RABRO DRIVE-EAST
HAUPPAUGE, NEW YORK 11788-4290
(516)853-3005 Fax. (516)853-2927

Other locations have detectable levels of these chemicals. In addition, other chemicals of concern have been detected at levels below prevailing MCLs, as follows:

Chloroform, in concentration as high as 5 ppb

1,1 dichloroethane, in concentration as high as 1 ppb

Trichloroethene, in concentration as high as 4 ppb

1,1 dichloroethane, in concentration as high as 3 ppb

Dichlorodifluoromethane, in concentration as high as 3 ppb

MTBE, in concentration as high as 1 ppb

Chlorodifluoromethane, in concentration as high as 2 ppb

Additionally, we are reviewing other sampling data for the area for the 1994-1997 period for further clarification of the extent of these drinking water quality deficiencies, and are continuing private well sampling in proximity to the known positive results.

The Suffolk County Department of Health Services has advised affected residents to limit use as appropriate, ie. not to use the water for drinking or cooking purposes, or in the case of nitrate contamination, for infant consumptive purposes. Additionally, for the volatile organic contaminants encountered, residents have been advised to limit inhalation route exposure, ie. showering, laundering and other cleaning activities. The type of chemicals detected in these wells may pose a significant health threat to area residents. It is requested that mitigative action be implemented in an expedited manner.

A survey report and other supportive documentation is enclosed.

Should you have any questions on the data, or require further information, please contact Paul J. Ponturo, P.E. Supervisor of the department's Bureau of Drinking Water. Thank you for your cooperation in this matter.

Very truly yours,

Clare B. Bradley
Clare B. Bradley, M.D., M.P.H.
Acting Commissioner



ROBERT J. GAFFNEY
County Executive

MARY E. HIBBERD M.D., M.P.H.
Commissioner

**SUFFOLK COUNTY
DEPARTMENT OF HEALTH SERVICES**

**VILLAGE OF HEAD OF THE HARBOR
1996 PRIVATE WELL SAMPLING SURVEY**

**SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
OFFICE OF WATER RESOURCES**

Mary E. Hibberd, M.D., M.P.H.
Commissioner

Joseph Baier, P.E., Director
Division of Environmental Quality

MAY 1997

Prepared by: Thomas Nanos R.S., Senior Public Health Sanitarian

BACKGROUND

In August of 1996 the Suffolk County Department of Health Services was asked by the Village of Head of the Harbor to repeat a study of private well water quality previously conducted in 1994. A total of thirty-four (34) wells were sampled. All the sites sampled were chosen by the Village.

As part of county-wide activities to evaluate the extent of pesticide contamination of private wells, just prior to the start of this study, we began another Village-wide survey of drinking water quality aimed specifically at detection of the herbicide, Dacthal. Initially individual households in proximity to known agricultural activities were invited to participate. This sub-survey was precipitated by a detection of an elevated concentration of that compound during a routine private well sampling. That effort is still continuing at this time with Bureau staff now seeking to sample specific homes that may have a greater likelihood of contamination.

Another sub-survey began near the conclusion of the primary survey directed at the detection of Volatile Organic Compounds (VOCs) in a specific area of the Village after elevated concentrations of the compound, tetrachloroethene, in that specific locale were discovered during the course of the primary study.

Plate 1 indicates sampling locations for the Village Sampling Survey as well as the sub-surveys.

SAMPLING SUMMARY

The results of the sampling indicate the following:

- 1) iron was detected in eight wells (23 %) exceeding the standard of .3 mg/l; the average concentration detected in all wells was .22 mg/l

2) nitrates were detected in all wells with the average concentration recorded being 6.05 mg/l (>60 % of the Maximum Contaminant Level of 10 mg/l); one well was measured with a concentration 10 mg/l and another had a concentration of 11.6 mg/l

3) tetrachloroterephthalic acid (a breakdown product of the herbicide, Dacthal) was detected in five wells in the primary study (15 %), two exceeded the MCL of 50 ppb with the average of the five detections recorded being 46.4 ppb

4) Volatile organic compounds (VOCs) were detected in twenty-one wells (62 %) with three, (9 %) having exceedances of their respective MCLs.

Each of these findings is described in expanded detail below.

INORGANIC CHEMICAL RESULTS

IRON

Iron is not normally considered harmful to health, but is the most frequent source of the off-taste, odor or staining complaints received by the Bureau. The average concentration of iron detected was .22 mg/l. Eight wells had concentrations ranging from .33 mg/l to 1.9 mg/l exceeding the drinking water standard of 0.3 mg/l. Please see Table # 1 for a summary of the iron concentrations detected. This department recommends connection to a public water supply wherever possible. If public water is not available, aesthetic problems caused by iron concentrations of less than one milligram per liter may be minimized by installation of a polyphosphate feeder. This treatment device does not remove iron from the water. Iron removal is desirable for iron concentrations in excess of one milligram per liter and can be accomplished by the filtration processes of oxidation or ion exchange. The sodium concentration in the water will be increased by treatment units which are regenerated with salt.

Nitrate

Nitrate contamination of groundwater is commonly attributed to the residential and agricultural use of fertilizers, leachate from sewage disposal systems and from animal manure. Excess nitrate may be harmful to infants under one year of age. A water supply containing nitrate in excess of the MCL should not be consumed by an infant or used in the preparation of infant formula. The nitrate MCL is 10.0 milligrams per liter. All wells had detectable concentrations of nitrate with twenty-three, (68 %) having concentrations greater than 50 % of the MCL. One well exceeded the standard with a concentration of 11.6 while another was just at the MCL with a finding of 10 mg/l. Please see Plate # 2 for a graphic representation of the nitrate concentrations observed. Refer to Table # 1 for a summary of the nitrate concentrations detected.

This department recommends connection to a public water supply wherever possible. If public water is not available, nitrate concentrations can be reduced by the installation of water treatment utilizing reverse osmosis or distillation processes. Should one decide to install a reverse osmosis unit, note that although this treatment system is capable of removing nitrates, the efficiency is dependent upon the nitrate concentration and/or the levels of other inorganic constituents in the water as well as various other operational factors. Therefore, a competent professional should be consulted regarding the installation of this type of system.

TETRACHLOROTEREPHTHALIC ACID (a breakdown product of the herbicide, Dacthal)

A breakdown product of the herbicide, Dacthal was detected in the primary study in five, (15 %) of the wells sampled with two having concentrations exceeding the MCL of 50 parts per billion (ppb) with concentrations of 56 and 68 ppb having been recorded. The average of the detections recorded was 46.4 ppb; positive samples ranged from 31 to 68 ppb.

Dacthal is a general use herbicide used for the control of broadleaf weeds in turf and on many vegetable crops. A national survey conducted by the United States Environmental Protection Agency named terachloroterephthalic acid as the most frequently detected pesticide in drinking water wells. This department recommends connection to a public water supply whenever possible. However, limited testing by this department has shown that granular activated carbon (GAC) filtration may be effective for removal of this chemical from drinking water. Experience has shown that ongoing monitoring and maintenance are necessary for continued optimal removal of this contaminant.

In 1989, the New York State Attorney General filed a lawsuit against the makers of Dacthal. Unfortunately, relief for private homeowners with contaminated wells was not granted at that time by the courts. As of this writing the Attorney General is considering an appeal of this ruling.

In the village-wide, Dacthal-only sub-survey twenty-four additional wells have been sampled thus far with three wells (12.5 %) having detections. One of these detections exceeded the MCL of 50 ppb with a concentration of 80 ppb having been recorded. The two other wells had detections measuring thirty-four and forty one ppb. Please refer to Plate # 3 for a representation of those locations sampled in the SCDHS sub-survey. Table # 2 provides details of the concentrations detected in the sub-survey. The Dacthal-only survey is on-going with locations in the village now being targeted for sampling by the Bureau particularly homes on the Bacon Road, Valleywood Courts East and West, Briarwood, Victoria and Nadia Courts, Saneck Road, Brackenwood Path and portions of Harbor Road.

VOLATILE ORGANIC CHEMICAL (VOC) RESULTS

Volatile Organic Compounds (VOCs) have been used in formulations of motor fuels, cleaning solvents, degreasing agents and as "active" and "inactive" ingredients in certain pesticides. Information on each of those compounds detected in this study follows later in this section. Whenever private well water is

found to be contaminated we recommend connection to a community water supply. Concentrations of VOCs can be reduced by granular activated carbon treatment.

The locations of detections of VOCs in the primary survey and sub-surveys are shown on Plate 4.

Of the thirty-four wells sampled in the primary survey fourteen, (41 %) had detection of one or more solvents. One well indicated solvent chemical concentrations in excess of the New York State Department of Health (NYSDOH) Maximum Contaminant Levels (MCL) of 5 parts per billion (ppb). Solvents were detected in all seven of the sites sampled in the SCDHS VOC sub-survey, three exceeding an MCL. Our evaluation of data led to a conclusion that all 10 detections of 1,2-dichloropropane were from agricultural sources. In total nine different VOC compounds were detected. Not all VOCs were found at every location. Plate # 1 provides a graphic representation of the sites sampled for the VOCs in the primary study. Please refer to Table # 1 for a summary of the concentrations of the specific compounds detected. A summary of their frequency of detection follows below.

VOLATILE ORGANIC COMPOUND	# OF WELLS WITH DETECTIONS
1,1,1-trichloroethane	11
1,2 dichloropropane	10
1,1-dichloroethane	4
tetrachloroethene	4
1,2,3-trichloropropane	2
methyl tertiary butyl ether	1
chloroform	1
trichloroethene	1
1,1 dichloroethene	1

The following is some brief information on each of the VOCs detected in the study:

1,1,1-TRICHLOROETHANE

The major use of 1,1,1-trichloroethane is as a solvent in metal degreasing and cleaning. It has a variety of other solvent uses and, as a chemical building block, is used to make other chemicals. 1,1,1-trichloroethane is also found in some commercial products such as stain removers. There are no natural sources of 1,1,1-trichloroethane (i.e., it is a man-made chemical).

1,1-DICHLOROETHANE

A breakdown product of 1,1,1-trichloroethane

TRICHLOROETHENE

The major use of trichloroethene is as a solvent used in metal degreasing and cleaning. It has a variety of other solvent uses and is used as a chemical building block to make other chemicals. There are no natural sources of trichloroethene.

1,1-DICHLOROETHENE

A breakdown product of trichloroethene.

1,2-DICHLOROPROPANE

It is used as a soil fumigant; as a solvent for metal degreasing, fats, oils, waxes, gums and resins; as an intermediate in the manufacture of other chemicals; as a lead scavenger for anti-knock fluids; and in dry cleaning fluids. There are no natural sources of 1,2-dichloropropane. Our evaluation of data in this particular survey led to the conclusion that our detections here relate to agricultural activities. Therefore locations of detections of this compound are shown on Plate 4 as pesticide detections.

TETRACHLOROETHENE

The major use for the chemical is as a solvent for dry cleaning fabrics and textiles and for metal degreasing operations. It is also used as a chemical building block to make other chemicals. There are no natural sources of tetrachloroethene.

1,2,3-TRICHLOROPROPANE

Used exclusively as a pesticide.

TOLUENE

Toluene is a common solvent with a variety of uses including paints, laquers, adhesives, dyes and rubber. Toluene is also a component of gasoline.

METHYL-TERTIARY-BUTYL-ETHER

Used exclusively as a gasoline additive.

CHLOROFORM

Is a by-product resulting from the combination of certain household chemicals and disinfectants, such as chorine, with organic and inorganic matter present in the ground water. There are no natural sources of chloroform.

The sub-survey for VOCs continues in the area of Carmans Lane with seven sites having been sampled thus far. All sites had detections with three, (43 %) having had MCL exceedances noted. The compound tetrachloroethene was observed several wells at elevated concentrations measuring 25, 17 and 34 ppb. The MCL for this compound is 5 ppb. Please refer to Table # 3 for details relating to this sub-survey. The sites included in the VOC sub-survey are indicated on Plate 4.

Another VOC, 1,2-dichloropropane, was measured at elevated concentrations exceeding the MCL (16 and 7 ppb) in two locations decided removed from each other. Therefore additional survey work is indicated to determine the extent of the concentrated area of each plume. The MCL for this compound is also 5 ppb.

DISCUSSION

The inorganic chemistry of the area may be regarded as

marginal. The average nitrate concentration recorded was 6.05 mg/l which, at > 50 % of the MCL, is considered significant by this Bureau indicating area-wide nitrate concentrations worthy of continued monitoring. Experience tells us that this trend of increasing nitrate concentrations will continue with expanded development.

Iron, while not of public health concern, is the most frequent cause of consumer dissatisfaction owing to the off-taste, staining, off-color and odor problems it causes. Twenty-three percent (23 %) of all the homes sampled had excessive concentrations of iron, the village-wide average concentration measured .22 mg/l. The MCL for iron is .3 mg/l therefore iron has the potential, as with nitrate, of becoming a community-wide contaminant of concern.

In many parts of the United States, including Long Island, water sources are naturally soft, with total hardness of 30 mg/l or less. Most untreated well water sources in Suffolk County fall in to this category. These waters are generally corrosive; on Long Island, public water supplies are usually treated to lessen the corrosive tendencies. The measure of pH is regarded as an indicator of the need for corrosion control treatment.

From the standpoint of human health, a relatively non-corrosive water supply is considered desirable to reduce concentrations of the corrosion by-products, primarily lead, copper and cadmium. These by-products result from contact of the water with plumbing materials within the home. Lead bearing materials such as brass fixtures and fittings are still commonplace, although the use of high lead content solder was banned for use in potable water supplies in new construction. Copper plumbing systems are almost universal. Cadmium can appear in trace concentrations in nearly any metallic plumbing component.

A second benefit of a non-corrosive water supply is the measurable improvement in the overall operational lifetime of plumbing system components (hot and cold domestic and water distributed space heating). In this survey, the relatively frequent detections of these corrosion by-products are similar to

findings in untreated private wells elsewhere in Suffolk County. The concentrations of these by-products vary with the length of time in which the water may be in contact with such plumbing materials. Because of this, before using the water for drinking purposes, it is considered desirable to flush the cold water lines for several minutes after prolonged periods of non-use (such as overnight). Further it is recommended that hot tap water not be used for cooking or drinking. Cold, flushed tap water from the faucet should be heated on the stove because hot water is more corrosive to household plumbing than cold.

This sampling survey / study confirms some conclusions regarding Village water quality reached as a result of prior studies. For example, the multiple VOC plumes previously defined in the 1994 study were again observed in this study. As indicated then, there appear to be a *minimum* of two distinct plumes as evidenced by the chemicals detected. The data would suggest these plumes are the result of some historical occurrence such as possible agricultural use in the example of 1,2-dichloropropane. The relative number of occurrences and the compounds observed remained fairly consistent. Given the limited data available, the wide distribution of these contaminants and the limited resources available for further research, the source(s) of the contamination cannot be determined at this time.

Of concern to this office is the *intrinsic migratory nature* of groundwater. The groundwater underlying the Village travels generally northward towards Stony Brook Harbor. As it migrates it picks-up and carries along with it any contaminants it may encounter. Thus while those homes participating in this study have been duly appraised of their drinking water quality our concern is for the many other homes at risk of unknowingly consuming tainted water. Further, because of the comparatively slow movement of the groundwater, those contamination problems identified are likely to persist for an indefinite time period. In the instance of the VOC sub-survey in the Carmens Lane vicinity this Bureau has endeavored to determine the current extent of the concentrated area of the plume. Likewise with the herbicide, Dacthal, we have surveyed sufficiently such that current survey efforts may now be focused on those locations most likely to be

impacted. Finally, as previously indicated, there are at least two other locations in the Village where additional survey work is justified.

This survey sampling provides a concise picture of water quality at those homes sampled however this only represents perhaps no more than 15 % of the population of the Village. We consider that the same cautionary results may apply to the remainder of the Village population, but note that routine surveillance of every home served by a private well is clearly beyond this Bureau's resources. These water samples may provide a snapshot of water quality at any given instant, but because of the migratory nature of the groundwater and its contaminants, the picture is dynamic, constantly changing and problems are indeed likely to travel from one home to the next. Therefore there are, at no time, assurances of acceptable water quality at any home in the Village of Head of the Harbor. While treatments for all these contaminants are available, in any case the costs involved include not only the initial purchase expense but on-going expenditures for chemical replenishment, mechanical maintenance and water quality monitoring. Finally, we do not regard it to be an acceptable public policy for private well owners to rely upon complex treatment systems for a similarly complex mix of contaminants of potential health concern.

CONCLUSIONS and RECOMMENDATIONS

This study serves to confirm previous findings regarding the marginal quality of drinking water in the Village of Head of the Harbor. The frequency of the detection of volatile organic chemicals, elevated concentrations of agricultural contaminants, nitrates and iron indicate that a significant portion of the limited aquifer underlying the Village has been contaminated.

Several alternatives are available to address this situation. The residents of the Village may continue to take their drinking water quality for granted. This Bureau has received approximately twelve requests for private well analysis per year in a community of approximately four hundred and thirty homes

indicating the need to raise public awareness of water quality issues. The village should undertake a campaign of community education directed towards a broader understanding of drinking water issues thereby encouraging individual households to avail themselves of this department's program of private well analysis. Residents should also be made aware of the need to dispose of household chemical wastes properly and to use them wisely and sparingly.

The village might underwrite a regular program of private well analyses so that residents may be routinely appraised of their drinking water quality. This program costs might alternately be billed back to the individual households or financed entirely by the Village but the program administration would be managed through Village offices. This would assure that contamination problems are identified on the basis of a regular, routine timeframe to those who participate. A "filter district" might be established wherein any necessary water filters and treatments are provided by the Village with the costs of installation, maintenance and monitoring underwritten by the community at large.

However, the alternative most strongly recommended by this Bureau as the most logical and desirable would be the extension and provision of community water supply to all homes in the Village. In any area where groundwater contamination is found, it is always this department's primary recommendation that public water be extended. The quality of a community water supply is routinely monitored by both the purveyor and, independently, this Bureau. The Federal Safe Drinking Water Act and both New York State and Suffolk County Health Codes require that all community water supplies meet drinking water standards. Thus the public may be assured of the safety of their drinking water.

Village residents may enjoy several additional benefits as a result of the extension of public water in to their community. First reliable flow and adequate pressure are ensured by law under all conditions even during periods of power outage. Enhanced fire protection would be provided through the availability of fire hydrants. Thus residents may realize a

reduction in fire insurance premiums. Further, our experience has shown that real estate property values are maintained or, more often, enhanced by the extension of a community water supply.

Current maps indicate the presence of Suffolk County Water Authority water mains on the western portion of the Village on Moriches Road going north on Cordwood Path. Based on Water District maps, southern portions of the Village may lie within the boundaries of the St. James Water District with water mains present on the Three Sisters Road, Highland Road and Thompson Hill Road. On the east the Village is bordered by the Stony Brook Water District which serves the communities east of the Stony Brook. Both of these water districts are, in turn, provided with water from the Suffolk County Water Authority. In summary, the Village may have access to a community water supply via several alternate routes. A more detailed evaluation of these possible options by the Village is recommended.

We conclude that it is prudent for the Village to seriously consider the advantages of the formation of a water supply district service via connection to the Suffolk County Water Authority. At the present time the State of New York has made available funding for the express purpose of facilitating the extension of community water supply in to communities faced with problems similar to those faced by the Village. This 'Drinking Water State Revolving Fund' (DWSRF) received additional funding this past Fall with the passage of the New York State Environmental Bond Act as well as other recently enacted federal legislation. This program is administered jointly by the New York State Department of Health (NYSDOH) and the New York State Environmental Facilities Corporation (NYSEFC). The NYSDOH provides technical assistance with respect to facilities planning and system components. The NYSEFC administers the financial aspects of the DWSRF. The NYSDOH can be reached at 1-800-458-1158 while the NYSEFC can be reached at 1-800-882-9721.

The Suffolk County Water Authority (SCWA) has extensive experience in the realm of water district formation and may be a resource for additional information. A municipality may contact Donald Slotnick at 516-563-0256 for guidelines with respect to SCWA bonding capabilities. Finally, the Office of the State

CHART #1

SUMMARY OF 1998 VILLAGE OF HEAD OF THE HARBOR PRIVATE WELL DATA

TAX MAP #	NAME	DATE	PH	NITRATE	IRON	1,1-Dichloro-ethane	1,1,1-Trichloro-ethane	1,2-Dichloro-propane	Tetrachloro-ethene	MTBE	DACTHAL	1,2,3-Trichloro-propane	Chloroform	Trichloro-ethene	1,1,1-Dichloro-ethene	Total VOCs
801 00500 0200 015000	BAXTER	9/8/98	6.3	9.7	<0.1	1.0	3.0	<0.5	0.8	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	4.8
801 00400 0200 010000	BONANNO	11/4/98	6.2	6.4	0.63	<0.5	1.0	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	1.0
801 00400 0200 004000	BOZZA	9/8/98	6.6	7.4	<0.1	<0.5	0.8	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	0.8
801 00500 0200 012000	BRADSHAW	10/24/98	6.0	6.7	0.44	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00300 0200 025000	CARDI	9/10/98	6.5	6.5	0.11	1.0	0.9	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00100 0100 025007	CHAN	9/10/98	6.0	1.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	1.9
801 00400 0100 016000	CREEDON	9/8/98	6.7	5.5	0.12	<0.5	<0.5	14.0	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00400 0200 016000	DALTON	9/8/98	6.5	6.6	<0.1	<0.5	0.8	<0.5	<0.5	<0.5	<10.0	2.0	<0.5	<0.5	<0.5	16.0
801 00500 0100 022000	DALY	10/24/98	6.3	16.2	0.51	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	0.8
801 00400 0100 006000	FEMINO	10/7/98	6.1	7.3	<0.1	0.5	1.0	<0.5	<0.5	<0.5	35.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00200 0200 006001	GELFAND	9/30/98	7.5	2.0	0.17	<0.5	<0.5	<0.5	<0.5	<0.5	31.0	<0.5	<0.5	<0.5	<0.5	1.5
801 00600 0200 001000	GOLDSTEIN	4/8/98	5.5	5.4	0.14	<0.5	<0.5	<0.5	0.8	0.8	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00100 0100 010000	GOODMAN	10/28/98	7.2	2.4	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	1.2
801 00600 0100 001001	GRESHIN	12/2/98	6.5	6.1	<0.1	<0.5	0.8	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00300 0100 019000	JACINTO	9/30/98	6.2	8.8	0.26	<0.5	<0.5	0.7	<0.5	<0.5	68.0	<0.5	4.0	<0.5	<0.5	4.7
801 00100 0100 003000	LAWRENCE	10/30/98	6.4	6.9	0.75	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00300 0200 010000	MAZZEO	10/7/98	6.7	6.5	<0.1	<0.5	<0.5	7.0	<0.5	<0.5	<10.0	1.0	<0.5	<0.5	<0.5	8.0
801 00200 0100 019001	MCMILLEN	10/30/98	7.2	1.8	0.18	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00200 0100 017009	MIRZA	11/4/98	6.4	2.9	0.69	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00400 0100 020000	MURPHY	10/28/98	7.1	5.9	0.14	<0.5	<0.5	3.0	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00100 0100 013000	NITTI	11/4/98	6.2	6.7	0.69	<0.5	<0.5	2.0	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	3.0
801 00100 0100 001001	NOSTRAND	10/30/98	6.5	3.9	0.20	<0.5	<0.5	2.0	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	2.0
801 00600 0100 003000	PEELING	11/18/98	6.2	7.3	<0.1	<0.5	1.0	<0.5	16.0	<0.5	<10.0	<0.5	<0.5	0.8	<0.5	16.8
801 00100 0100 009000	REGULINSKI	11/1/98	6.3	10.0	1.90	<0.5	<0.5	4.0	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	4.0
801 00600 0100 008000	SAYRE	11/18/98	6.6	3.6	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00200 0100 008000	SCHAMBRA	11/4/98	6.3	3.4	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00600 0100 008006	SHEPHERD	9/8/98	5.8	2.7	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00500 0100 021000	SHUTKA	8/27/98	6.1	7.4	0.33	<0.5	<0.5	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	<0.5
801 00400 0100 017000	SHYBUNKO	9/30/98	6.9	6.9	<0.1	0.8	2.0	0.8	<0.5	<0.5	42.0	<0.5	<0.5	<0.5	0.7	<0.5
801 00600 0200 025000	STARR	11/4/98	6.1	7.8	0.27	<0.5	2.0	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	4.3
801 00300 0300 001003	VAN VECHTEN	11/4/98	6.9	8.6	<0.1	<0.5	<0.5	1.0	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	2.0
801 00600 0100 003005	VELIATH	10/7/98	6.6	5.8	<0.1	<0.5	1.0	<0.5	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	1.0
801 00200 0100 009000	WESE	11/4/98	6.1	4.2	<0.1	<0.5	<0.5	3.0	<0.5	<0.5	<10.0	<0.5	<0.5	<0.5	<0.5	1.0
801 00300 0200 00900	WILDZUNAS	10/7/98	5.3	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	56.0	<0.5	<0.5	<0.5	<0.5	3.0
New York State Drinking Water Standard			NA	10 mg/l	0.3 mg/l	5 PPM	5 PPM	5 PPM	5 PPM	50 PPM	50 PPM	5 PPM	100 PPM	5 PPM	5 PPM	NA

VOC Defects for Surveys SV0197, SV1097, SV2490

STARR				801 00600 0200 025000					2				
Sweeney	2	Tide Mill Rd	Saint James	0800 05200 0100 019000	0.6		0.7	9	3	2	2		
Tarigo	337	River Rd	Saint James	0800 05200 0100 005000	1			1	5	1			
VAN VECHTEN				801 00300 0300 001003									
VELIATH				801 00800 0100 003005					1				
Warren	19	Carmen Lane	Saint James	0801 00800 0100 029000					1	0.5			
WIESE				801 00200 0100 009000									
WILDZUNAS				801 00300 0200 00900									
Zingale	2	Fells Way	Head Of Harbor	0801 00600 0200 028000	0.7			0.5	4	2		1	

VOC Delects for Surveys SV0197, SV1697, SV2496

Name	House	Street	Hamlet	DSBL	Chloroform	1,1 Dichloroethene	1,2 Dichloroethene	Trichloroethene	Trans-1,2 Dichloroethene	1,1,1 Trichloroethene	1,1 Dichloroethane	Dichlorodifluoroethane	Methyl-Tert-Butyl-Ether (MTBE)	Chlorodifluoroethane
Abbene	6	Tide Mill Rd	Saint James	0800 05200 0100 021000					2			0.6		
Avellino	22	Carman Lane	Saint James	0801 00600 0100 013001			0.9		25					
Badolato	300	River Road	Saint James	0800 05200 0100 018000			0.9		4	0.9	0.6	1		
BAXTER				801 00500 0200 015000					0.6	3	1.0			
Bogad	333	River Rd	Saint James	0800 05200 0100 007000		1			1	4	2			
BONANNO				801 00400 0200 010000						1				
Bovicino	35	Branglebrink Road	Saint James	0800 05200 0300 004000					1	1				
BOZZA				801 00400 0200 004000						0.8				
BRADSHAW				801 00500 0200 012000										
Brooks	8	Tide Mill Rd	Saint James	0800 05200 0100 022000			1		5	1	1	2		
CARDI				801 00300 0200 025000						0.9	1			
CHAN				801 00100 0100 025007										
CREEDON				801 00400 0100 018000										
D'Antonia	277	Nissequogue River	Saint James	0800 05200 0100 017000					2					
DALTON				801 00400 0200 018000						0.8				
DALY				801 00500 0100 022000										
DeCaro	6	Wetherill Lane	Saint James	0801 00600 0100 030003						2	0.5			
Delair	23	Moriches Rd	Saint James	0802 01200 0100 003000		0.5	3	0.9	3	2	1			
Dodge	271	Sachem Hill Pl	Saint James	0800 05200 0100 008000			2	0.7	10	1	1	2	0.8	1
Dunton	7	Carman Lane	Saint James	0801 00600 0100 004000				0.7	1	2	1			
FEMINO				801 00400 0100 008000						1	0.5			
Fortunato	339	River Road	Saint James	0800 05200 0100 004000		0.6		0.5	4	3	1	1		
Franco	21	Carman St	Saint James	0801 00600 0100 028000					1					
Garguilo	12	Harbor Road	Head Of Harbor	0801 00800 0100 010000		0.5			0.8	1	0.6			
GELFAND				801 00200 0200 008001										
Glison		Branglebrink Road	Nissequogue	0802 01200 0100 012000			0.7	0.6	1	3				
GOLDSTEIN				801 00600 0200 001000					0.6				0.6	

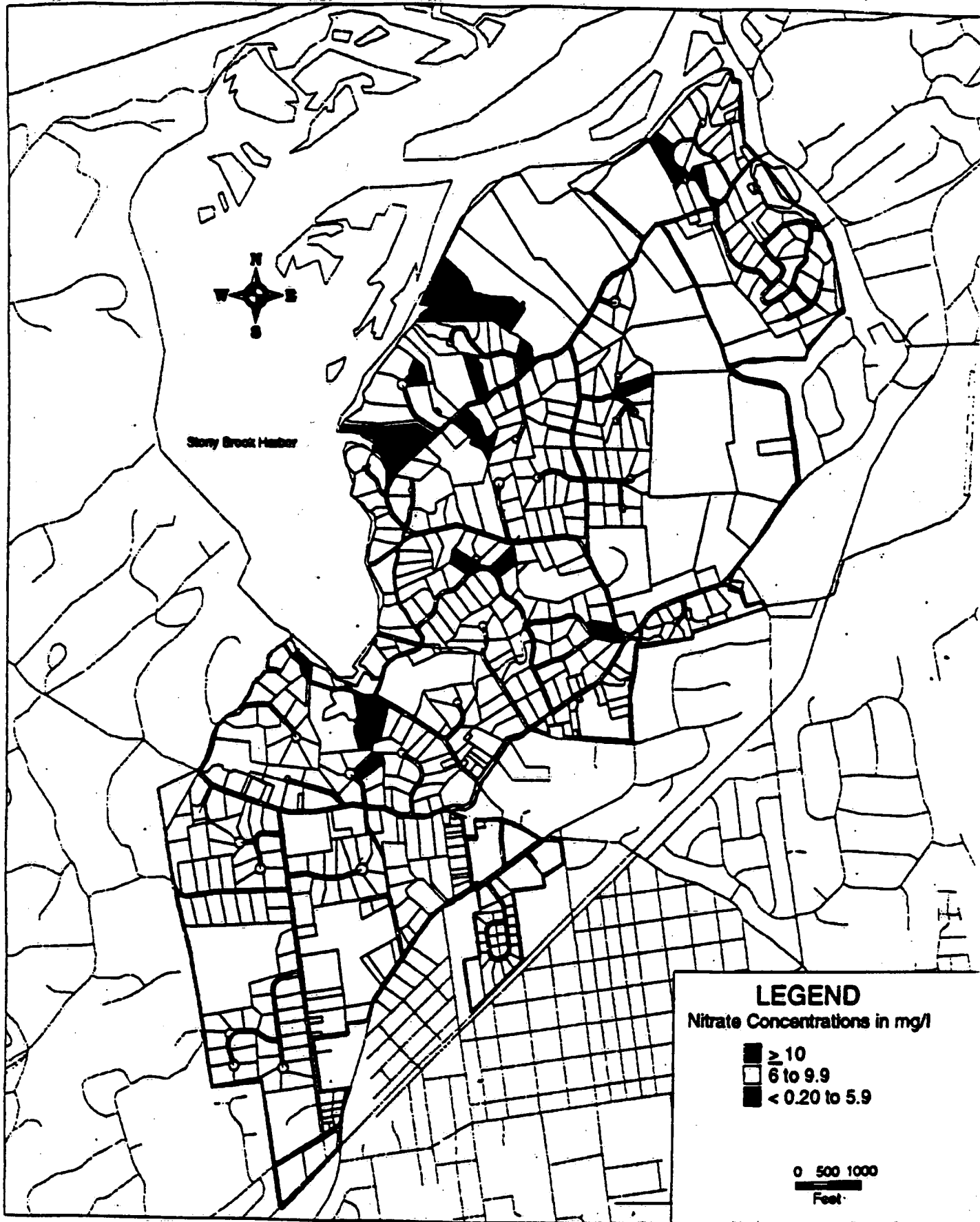
TABLE # 3
SUMMARY of the VILLAGE of HEAD of the HARBOR VOCs SUB-SURVEY

TAX MAP NUMBER	SAMPLE DATE	1,1-DICHLORO-ETHENE	1,1,1-TRICHLORO-ETHANE	TETRA-CHLORO-ETHENE	1,1-DICHLORO-ETHENE	TRICHLORO-ETHENE	TOTAL VOCs
801 00100 0100 012000	1/27/97	<0.5	<0.5	25	0.9	<0.5	25.9
801 00600 0100 004000	1/8/97	1	2	1	<0.5	0.7	4.7
801 00500 0200 017000	1/7/97	0.6	1	0.8	0.5	<0.5	2.9
801 00600 0100 014000	2/3/97	<0.5	0.6	3	<0.5	<0.5	3.6
801 00600 0100 027000	2/11/97	<0.5	1	17	<0.5	0.7	18.7
801 00600 0100 002000	2/3/97	1	2	34	0.6	2	39.6
801 00600 0200 029000	1/7/97	0.5	1	<0.5	<0.5	<0.5	1.5
New York State Drinking Water Standard		5 PPB	5 PPB	5 PPB	5 PPB	5 PPB	NA

VOC Delects for Surveys SV0197, SV1697, SV2496

GOODMAN				801 00100 0100 010000															
GRESHIN				801 00800 0100 001001															
Grosskopf	1	Highwood Court	Saint James	0800 05200 0300 033000	3			0.9			4	0.8							
Grosskopf	211B	River Rd	Nissequogue	0802 01300 0100 013000								0.5							
Hauptman	1	Tide Mill Road	Saint James	0800 05200 0100 027000			1			5	0.9	0.5		1				0.6	
Hayes	9	Watercrest Court	Saint James	0801 00800 0200 004000			1	1		2	2	0.8							
Hehir	50	Branglebrink Road	Saint James	0802 01200 0100 013004							2	0.5							
JACINTO				801 00300 0100 019000	4														
Johnson	343	River Road	Saint James	0800 05200 0100 002000	1														
Johnson	284	River Road	Saint James	0800 05200 0100 001000	1														
Kildare	341	River Road	Saint James	0800 05200 0100 003000			2			2	1	1	0.9					2	
Klein		Branglebrink Road	Saint James	0800 05200 0300 003000			6	1		12	2								
Krauth		Branglebrink Road	Nissequogue	0802 01200 0100 008000			4	0.9		8	1	0.5							
LAWRENCE				801 00100 0100 003000															
Lewis	23	Morches Road	Saint James	0802 01200 0100 003000							2	0.6							
MAZZEO				801 00300 0200 010000															
MCMILLEN				801 00200 0100 019001															
MIRZA				801 00200 0100 017009															
Mistrella	270	Sachem Hill Place	Saint James	0800 05200 0100 009000		0.8	4	1		15	4	3	3					1	
Mohammed	20	Harbor Hill Road	Saint James	0801 00800 0100 008004				4			0.8								
MURPHY				801 00400 0100 020000															
NITTI				801 00100 0100 013000															
NOSTRAND				801 00100 0100 001001															
PEELING				801 00800 0100 003000				0.8		15	1								
Peterson	3	Cordwood Path	Saint James	0801 00800 0100 014000						3	0.6								
REGULINSKI				801 00100 0100 009000															
Renna		Branglebrink Road	Saint James	0802 01200 0100 007000		0.5	2	1		2	4	2							
SAYRE				801 00800 0100 008000															
SCHAMBRA				801 00200 0100 008000															
SHEPHERD				801 00800 0100 008006															
SHUTKA				801 00500 0100 021000		0.7													
SHYBUNKO				801 00400 0100 017000							2	0.8							
Silverman	16	Carman Lane	Saint James	0801 00800 0100 027000				0.7		17	1								
Spangher	28	Cordwood Path	Saint James	0801 00800 0100 002000		0.6		2		34	2	1							

1996 VILLAGE SURVEY- NITRATE CONCENTRATIONS



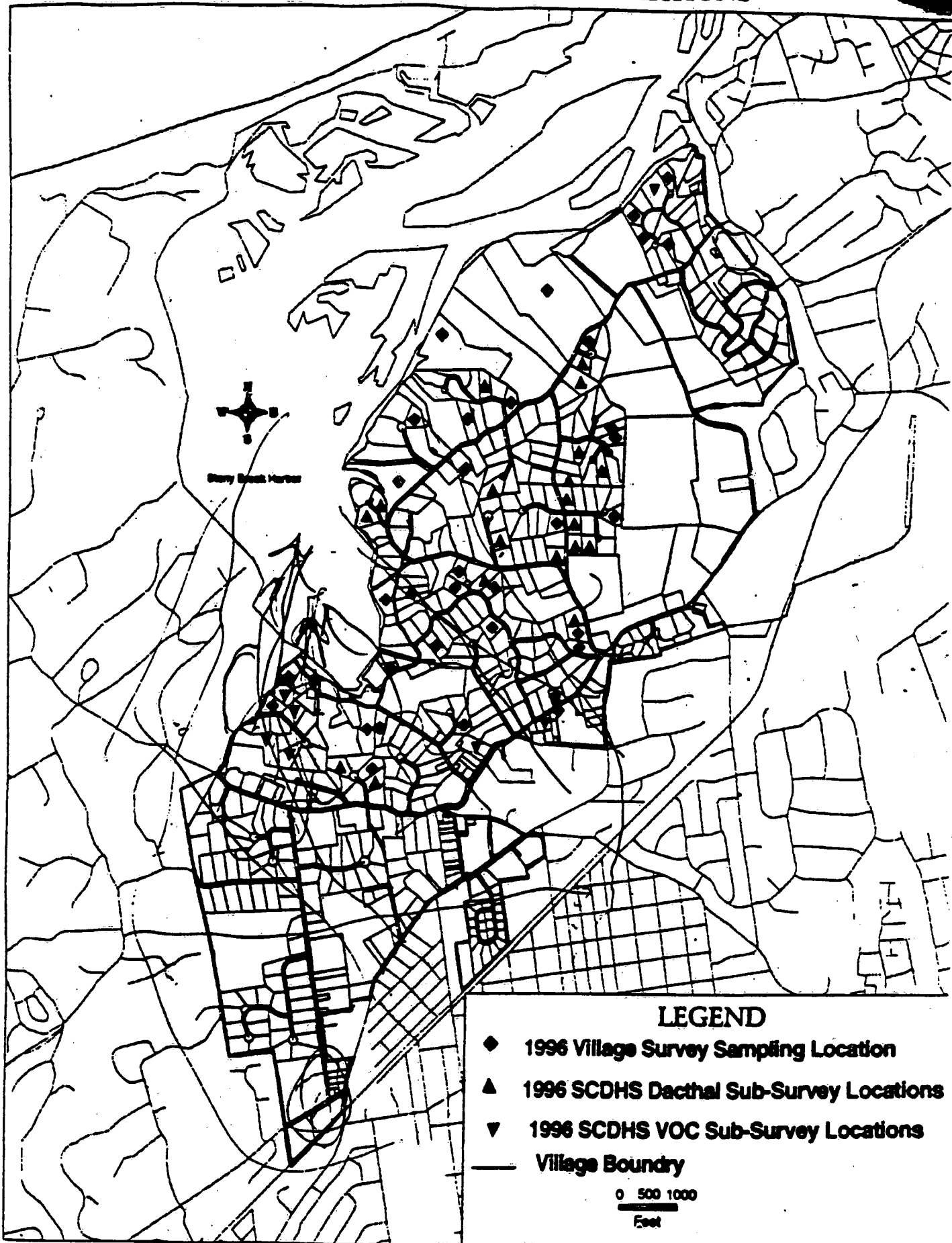


FIGURE 7-3
1996 SCDHS DACTHAL ONLY SUB-SURVEY

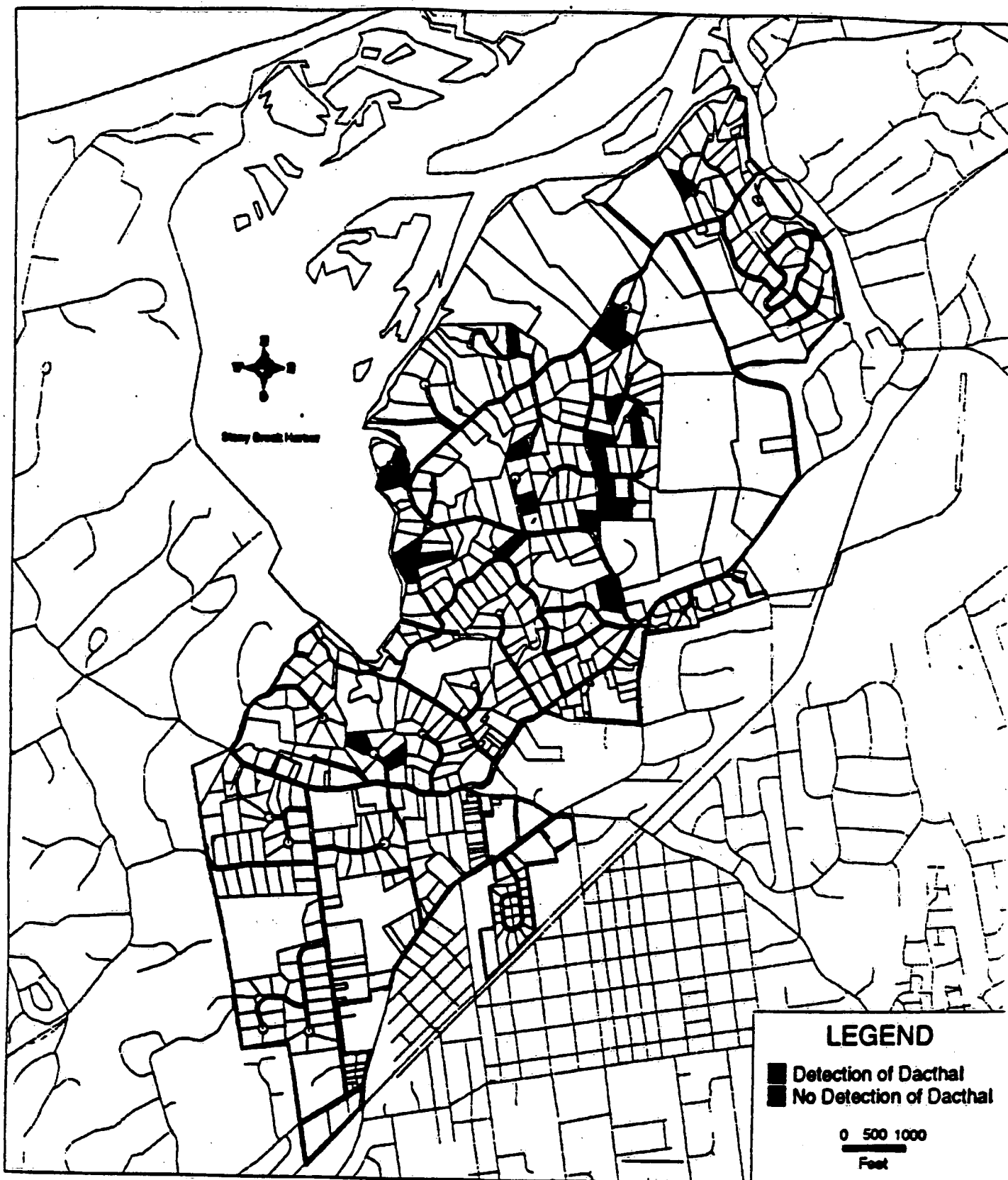
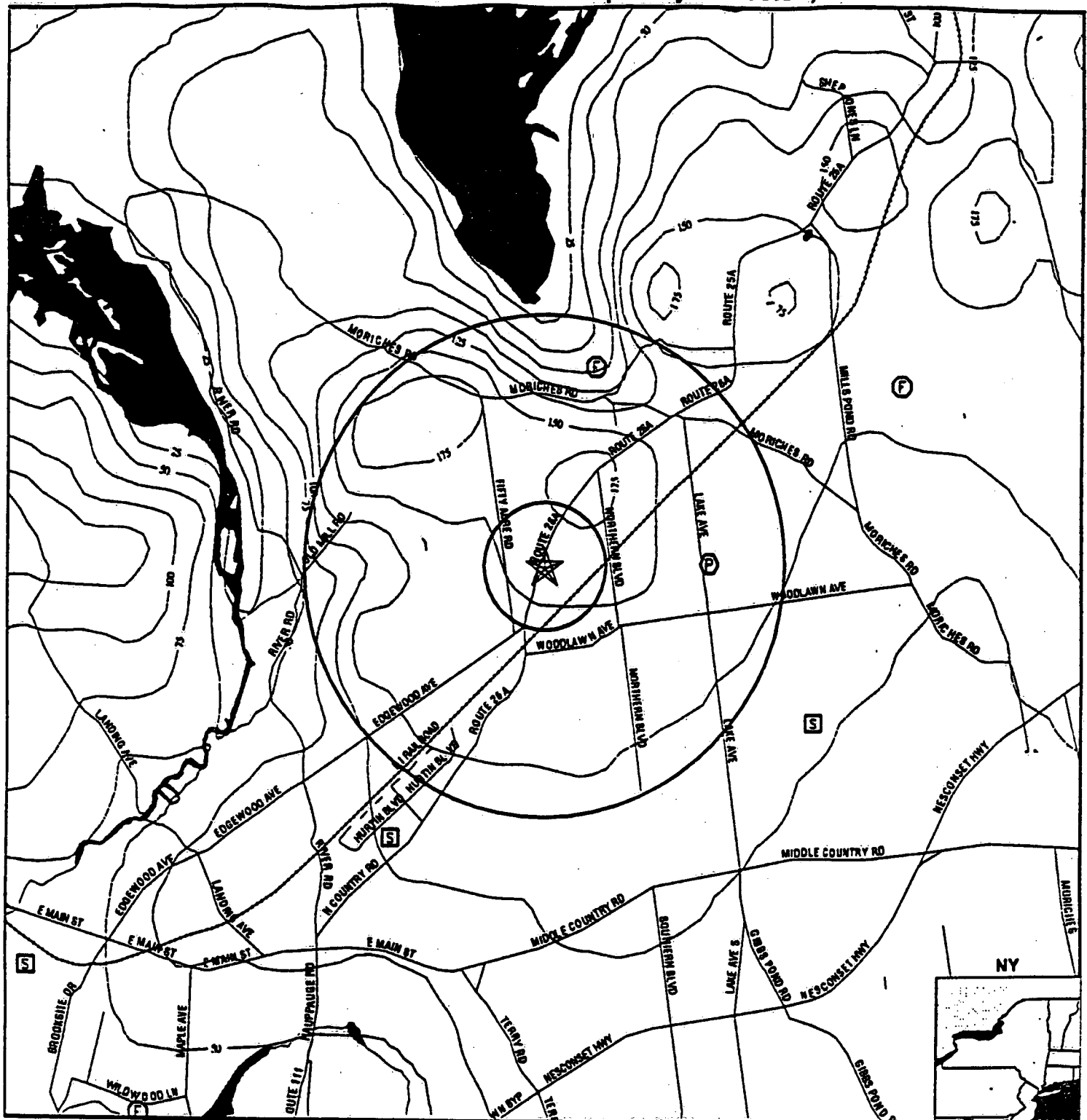


Figure 1
Site Map
Smithtown Groundwater Contamination Site

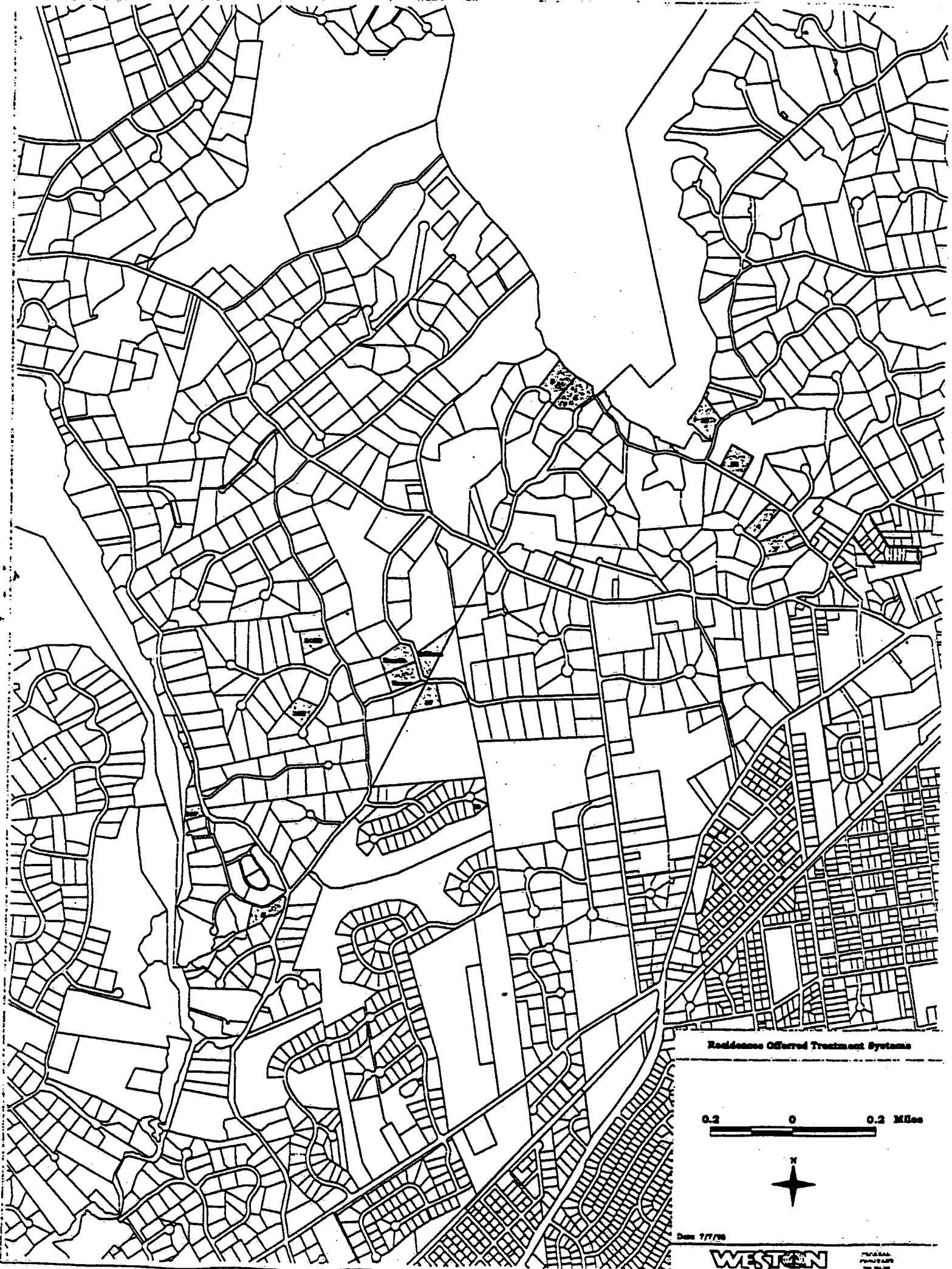


- Major Roads
- Contour Lines
- Waterways
- Earthquake epicenter, Richter 5 or greater
- Closest Federal Well in quadrant
- Closest State Well in quadrant
- Closest Public Water Supply Well

(HD) Closest Hydrogeological Data

TARGET PROPERTY: Smithtown Groundwater
ADDRESS: North Country Rd
CITY/STATE/ZIP: Smithtown NY 11780
LAT/LONG: 40.8782 / 73.1698

CUSTOMER: Roy F. Weston, Inc.
CONTACT: Dennis Foerter
INQUIRY #: 1226522.5p
DATE: February 02, 1998 2:23 pm



Residences Offered Treatment Systems



Date 7/7/98

WESTON
Engineering & Construction

PROJECT
NO. 00-00

ATTACHMENT 2
Action Memorandum dated December 30, 1998



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

ACTION MEMORANDUM

DATE: DEC 30 1998

SUBJECT: Change in Scope of Response and Ceiling Increase at the Smithtown Groundwater Site, Smithtown, Suffolk County, New York

FROM: Eric J. Wilson, On-Scene Coordinator
Removal Action Branch

TO: Richard L. Caspe, Director
Emergency and Remedial Response Division

THRU: Richard C. Salkie, Chief
Removal Action Branch

Site ID No.: KQ

I. PURPOSE

The purpose of this Action Memorandum is to document a verbal authorization for a change in the scope of the removal action and to request a ceiling increase to continue removal activities described herein for the Smithtown Groundwater Contamination Site (Site), Smithtown, Suffolk County, New York. On July 23, 1998, the funding was authorized for a removal action to install granular activated carbon treatment systems in homes where well water was found to contain perchloroethylene (PCE) or it's breakdown products in excess of the federal Maximum Contaminant Levels (MCLs). On August 10, 1998, the Director of the Emergency and Remedial Response Division (ERRD) verbally authorized a change in the scope of the removal action at the Site. The total project ceiling authorized, to date, is \$250,000. Conditions at the Site continue to meet the criteria for a removal action under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as documented in Section 300.415(b)(2) of the National Contingency Plan (NCP).

The goal of the removal action proposed in this memorandum is to provide an alternate water supply to homes with wells contaminated with PCE or it's breakdown products above MCLs. Where possible, connections to water mains will be provided. Where water mains are not available, individual household carbon treatment systems will be installed or existing treatment s

systems will be upgraded. The cost, to date, for this project is \$197,000. These actions are expected to cost an additional \$253,000 which will bring the total estimated project ceiling to \$450,000.

There are no nationally significant or precedent-setting issues associated with this removal action.

II. SITE CONDITIONS AND BACKGROUND

This Action Memorandum documents the proposed time-critical removal action for the Site. The Comprehensive Environmental Response, Compensation and Liability Information System ID number for the Site is NY0002318889.

A. Site Description

1. Removal site evaluation (RSE)

The U.S. Environmental Protection Agency (EPA) received a request on October 9, 1997 from the New York State Department of Environmental Conservation (NYSDEC) to provide assistance in funding alternative water supplies for residences affected by contaminated groundwater. The NYSDEC request included a private well sampling survey, prepared by the Suffolk County Department of Health Services (SCDHS) which presented drinking water survey results from 34 private wells in the area. The survey did not show concentrations of hazardous substances in excess of EPA drinking water Removal Action Levels (RALs).

Additional sampling by the SCDHS, submitted to EPA in January 1998, showed RAL exceedances for PCE, a hazardous substance. The SCDHS collected samples from approximately 150 private wells in the Villages of Nissequogue, Head of the Harbor and the Hamlet of St. James, the areas that make up the Site. SCDHS discovered 23 residences contaminated with PCE above the MCL of five parts per billion (ppb). Four of these residences had concentrations of PCE exceeding EPA's RAL. As a follow up to the sampling completed by SCDHS, EPA sampled 295 homes in the area to determine the extent of PCE contamination. Based on all the sampling data generated, a total of 34 residential wells have been determined to be contaminated with PCE (or its breakdown products) at concentrations above the MCLs. The RAL for PCE has been exceeded in six private wells. The SCDHS has advised all affected residents not to use the water for drinking or cooking purposes and to limit exposure through direct contact.

The NYSDEC request for assistance and SCDHS data are included in the Action Memorandum for the Site dated July 23, 1998 is included as Attachment 1.

2. Physical location

The Site is located in the Town of Smithtown in an area encompassed by the Villages of Nissequogue and Head of the Harbor and the Hamlet of St. James. The homes in this area use

private wells for potable water supply and septic systems for sanitary waste water disposal. Public water service is being extended into several of the areas affected by the groundwater contamination. The Site is situated south of Stoney Brook Harbor and east of the Nissequogue River.

3. Site characteristics

Wells contaminated above the RAL and MCL are located in the Village of Nissequogue, Village of Head of the Harbor and the Hamlet of St James. The area is primarily residential with some light commercial industry to the east in the Village of St. James and to the south in Smithtown. The majority of residences within the project area rely on groundwater as their sole source of potable water. The soil in the area is primarily sandy with discontinuous clay lenses.

According to information provided by SCDHS and preliminary information gathered by EPA, the source of the groundwater contamination has not yet been determined. SCDHS is currently investigating eleven current or former commercial/industrial facilities in the area. All of these facilities are located east of the Site. Groundwater flow in the area is from the southeast to the northwest toward the Nissequogue River and Stoney Brook Harbor.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling conducted between 1996 and 1998 by SCDHS and in April 1998 by EPA has identified 34 private wells that are contaminated with volatile organic compounds (VOCs) primarily PCE, in concentrations above the Federal and MCLs. Six of these homes are contaminated above the RAL for PCE.

The materials below in Table I are CERCLA designated Hazardous Substances, as listed in 40 CFR Table 302.4. This data is only a summary of the more pertinent analytical information available for the Site.

Table I - Smithtown Groundwater Contamination Site, Smithtown, NY

CONTAMINANT	MAXIMUM * CONCENTRATION FOUND (ppb)	STATUTORY SOURCE FOR ** DESIGNATED AS A HAZARDOUS SUBSTANCE UNDER CERCLA	EPA RAL (ppb)	EPA MCL (ppb)
1,1,1 Trichloroethane	10	1,2,4	1000	200
Perchloroethylene	200	1,2,4	70	5
Trichloroethylene	6.2	1,2,4	300	5

Legend

1. Clean Water Act, Section 311(b)(4)
2. Clean Water Act, Section 307(a)
4. RCRA Section 3001

- * Based on sampling results from SCDHS (1996-1998) and EPA, April 1998
- ** Statutory source for designation as a hazardous substance.

5. National priorities list (NPL) status

The Site was proposed for the NPL on September 29, 1998.

6. Maps, pictures and other graphic representations

Site maps are included in the Action Memorandum for the Site dated July 23, 1998 (see Attached).

B. Other Actions To Date

1. Previous actions

Verbal authorization was granted to undertake a removal action to deliver bottled water to those residences identified as having wells contaminated with PCE and its breakdown products. This activity was initiated April 8, 1998 for homes exceeding the RAL and June 25, 1998 for homes exceeding the MCLs. This action is intended to protect the health of the public until a more permanent solution can be implemented. Some residents have installed water treatment systems for their household supplies.

2. Current action

In July 1998, EPA selected a response action to address the immediate health concerns associated with exposure to PCE in household water supplies. Alternatives evaluated included the installation of household granular activated carbon treatment systems, installation of household air stripping systems and connection of homes to the public water service. Installation of granular activated carbon treatment systems was selected for the removal action because it would

would provide temporary protection from exposure to PCE, could be implemented quickly, and was the most cost-effective option evaluated. EPA's plans to propose the Smithtown Groundwater Site for the NPL were also taken into consideration in the selection of a removal alternative.

This decision was announced at a public meeting in Smithtown on July 22 1998. Discussions with local officials and residents at this meeting and afterwards revealed that privately-funded water mains were planned or proposed for much of the affected area. This finding prompted a reevaluation of the response action selected. Providing connections to the public water supply was reconsidered as part of this reevaluation.

The following factors were considered in reevaluating the response action selected: cost, permanence, protection and public acceptance. Connecting the affected residences to the public water mains would provide a permanent, safe alternate water supply and protect the residents from exposure to PCE in household water. The cost for providing the connections to the water mains is comparable to the cost of providing treatment systems to affected homes. Connection to the public water supply was preferred over installation of treatment systems by the majority of the affected residents. As a result of this reevaluation, the removal action selected was revised to include providing connections to water mains where they are available. On August 11, 1998, the Director of the ERRD verbally approved the described change in scope.

As a result of EPA's offer to provide water service connections to the affected residences, residents have organized and funded the extension of water mains into several of the affected areas. This has increased the number of homes to be provided with service connections over original estimates. In addition, the cost to provide service connections is greater than originally anticipated. As a result of these factors, a ceiling increase is required to complete this removal action. To date, service lines installations have been completed for 16 homes. Treatment system installation or upgrades have been completed for four homes. The total cost to date for these actions is \$197,000. Fourteen of the 34 affected homes remain to be addressed.

C. State and Local Authorities' Roles

1. State and local actions to date

The SCDHS is taking a supportive role at the Site. The SCDHS has and continues to sample potable wells in the vicinity of the Site at the request of the residents. This activity will assist in identifying additional contaminated wells and in determining the movement of the contaminants in the subsurface.

SCDHS has also installed five monitoring wells on the Site in an attempt to locate the potential source or sources of the contamination. SCDHS is also actively investigating potential sources through a septic system sampling program at businesses in the area that may be responsible for the groundwater contamination.

2. Potential for continued State/local response

The SCDHS will continue its water sampling program in the affected and surrounding areas upon request of individual residents. It will also continue its investigation of potential sources. Residential well data collected by SCDHS will be used to monitor the movement of the plume and to determine if additional homes will need to be addressed.

NYSDEC is not able to undertake timely response actions to eliminate the threats posed by the Site since a source has not been identified. The local government does not have the resources necessary to provide a safe drinking water supply in a timely manner.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site continue to meet the criteria for a removal action under Section 40 CFR 300.415(b)(2) of the NCP. Qualifying criteria for the threats to the public health and welfare include the following:

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

The results generated by the SCDHS sampling between 1996 and 1998 and EPA's April 1998 sampling identified 34 wells contaminated by PCE (or its breakdown products) in excess of the Federal and State MCLs. EPA's RAL of 70 ppb is exceeded in six of these wells.

Exposure to PCE and VOCs can occur from ingestion of contaminated water, ingestion of food prepared with contaminated water, or inhalation of vapors. Vapors of hazardous VOCs can accumulate in air within the home as a result of the household use of contaminated water. Humidifiers, dishwashers, clothes washers, showers and household cleaning, can increase the concentration of vapors in air inside the home.

The associated health effects from exposure to PCE at elevated concentrations is provided below.

SUBSTANCE

Tetrachloroethene

HEALTH EFFECT

A,B,C,D,E,G

A - Eye, skin, respiratory irritant

B - Liver damage

C - Kidney damage

D - Toxic by inhalation, ingestion, or dermal contact

E - Carcinogenic

F - Mutagenic

G - Central nervous system effects

Available data also indicates that when high concentrations of PCE are inhaled, single exposures can affect the central nervous system leading to dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking as well as walking and possibly unconsciousness and death. Short term effects as described above would result from exposure of 100 ppm, orders of magnitude greater than the levels expected from the contaminant present at the Site. The health effect of greatest concern for the Smithtown site is the long term carcinogenic effects of PCE.

- (vii) **The availability of other appropriate federal or state response mechanisms to respond to the release;**

EPA is the only government agency capable of taking timely and appropriate action to respond to the threat posed by the presence of hazardous substances at the Site. As discussed in Section II.C., State and local authorities are not able to undertake timely response actions to eliminate the threats posed by the Site.

B. Threat to the Environment

Groundwater, a natural resource, has been determined to be contaminated with volatile organic compounds. At this time the extent of the threat to the environment cannot be clearly defined since the size of the plume is unknown. The Site is bordered by the Stony Brook Harbor and the Nissequogue River. Sampling data thus far appears to indicate the contamination is moving in a northwest direction toward these water bodies. Residential wells directly adjacent to the harbor are contaminated above the RAL.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

Site-related VOCs have been identified at concentrations in excess of MCLs in the water supply to 34 homes. At homes where MCLs were exceeded and water service is available or will become available during the course of the removal action, connection to water mains will be provided. This includes installing the copper service line from water company distribution system at the property line to the house and disconnecting the private water supply well.

At homes where MCLs were exceeded and water service is not available, individual household carbon treatment systems will be installed or existing treatment systems (installed by the homeowner) will be upgraded. Treatment systems installed or upgraded as part of the removal action will be maintained for the duration of the removal action.

2. Contribution to remedial performance

The actions proposed in this memorandum will address the threats posed to public health by providing a safe drinking water supply to affected residences. The proposed action would not adversely affect any plans for long-term remediation of the aquifer.

3. Description of alternative technologies

Two alternatives were considered to address the health threats associated with exposure to VOCs in private wells at the Site: installation of household carbon treatment systems at the wellhead and connection to available water service.

(i) Household Carbon Treatment Systems

Carbon treatment is an effective means of removing the contaminants of concern from water. Individual household treatment systems would include: a prefilter for sediment control; two activated carbon beds to remove VOCs; and an ultra-violet light disinfection unit for bacteriological control. These treatment systems would provide temporary protection in households where they are installed. GAC units are reliable and easily maintained and operated, but require some monitoring, operation and maintenance (MO&M) to function properly.

(ii) Connection to Water Service

Connection of affected homes to available water service would provide residents with permanent protection from exposure to VOCs.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Due to the time-critical nature of this removal action, an EE/CA will not be prepared.

5. Applicable or relevant and appropriate requirements (ARARs)

Federal ARARs determined to be practicable for the Site are the Clean Water Act and the Safe Drinking Water Act.

6. Project schedule

Removal activities will continue upon approval of this Action Memorandum, weather permitting. The removal action will be completed within the one year CERCLA statutory limit.

B. Estimated Costs

This project involves the installation water service connections or of water treatment systems at residences where site-related VOCs were found in the water supply at levels exceeding MCLs; 34 residences currently meet this criteria. Funds not utilized for this purpose may be used for the installation of treatment systems at additional qualifying residences identified during the course of the removal action. The estimated costs for the completion of this project are summarized below.

	<u>Current Ceiling</u>	<u>Cost to Date</u>	<u>Cost to Complete</u>	<u>Proposed Ceiling</u>
<u>Extramural Costs:</u>				
<u>Regional Allowance Costs:</u>				
ERRS Cleanup contractor: (including contingency)	\$185,000	\$142,600	\$154,000	\$297,000
<u>Other Extramural Costs:</u>				
START	<u>20,000</u>	<u>14,800</u>	<u>24,000</u>	<u>39,000</u>
Subtotal Extramural Costs	205,000	157,400	178,000	336,000
Extramural Cost Contingency (20%)		<u>N/A</u>	<u>36,000</u>	<u>36,000</u>
Total Extramural Costs	205,000	157,400	214,000	372,000
<u>Intramural Costs:</u>				
Intramural Direct Cost	15,000	13,200	13,000	26,000
Intramural Indirect Costs	<u>30,000</u>	<u>26,100</u>	<u>26,000</u>	<u>52,000</u>
Total Intramural Costs	45,000	39,300	39,000	78,000
TOTAL PROJECT CEILING	\$250,000	\$196,700	\$253,000	\$450,000

VII. **EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

If the funds for the removal action described herein are not authorized, the groundwater contamination will continue to pose a threat to human health and welfare.

VIII. **OUTSTANDING POLICY ISSUES**

None.

IV. ENFORCEMENT

No federal enforcement action is in progress at this time. An investigation into the source of the contamination is underway. Should a responsible party or parties be identified and be willing to undertake timely and appropriate corrective action, all or part of the funds requested herein may not be spent.

X. RECOMMENDATIONS

This decision document represents the selected removal action for the Smithtown Groundwater Contamination Site, which is located within the Smithtown, Suffolk County, New York. This document was developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site continue to meet the NCP Section 300.415(b)(2) criteria for a removal action. I recommend you authorize the change in scope and the approved proposed ceiling increase of \$200,000. The total project ceiling if approved will be \$450,000 of which \$297,000 comes from the regional removal allowance. There are sufficient monies in our current Advice of Allowance to fund this project.

Please indicate your approval and authorization of funding for the Smithtown Groundwater Site, as per current Delegation of Authority, by signing below.

Approved: *Richard L. Caspe* Date: 12/30/98
Richard L. Caspe, Director
Emergency and Remedial Response Division

Disapproved: _____ Date: _____
Richard L. Caspe, Director
Emergency and Remedial Response Division

cc: (after approval is obtained)

J. Fox, RA
W. Muszynski, DRA
R. Caspe, ERRD-D
R. Salkie, ERRD-RAB
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